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FINAL

ENVIRONMENTAL IMPACT STATEMENT

Proposed

1971 OUTER CONTINENTAL SHELF OIL

AND GAS GENERAL LEASE SALE

OFFSHORE EASTERN LOUISIANA

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Summary Sheet

Environmental Statement ( ) Draft (X) Final
Prepared By: Bureau of Land Management, Division of Minerals

1. Proposed Oil and Gas Lease Sale, Outer Continental Shelf, Gulf of Mexico.
(X) Administrative Action ( ) Legislative Action

2. Eighty-six tracts (396,250 acres) of OCS lands are proposed for leasing action. The tracts are located offshore Louisiana, Mississippi, and Alabama.

3. All tracts offered pose some degree of pollution risk to the marine environment and adjacent shoreline. The risk potential relates to adverse effects on the environment and other resource use which may result from major or continuous oil spillage. All tracts have been ranked according to relative risk potential.

4. Alternatives considered:

a) Hold the sale in modified form
b) Withdraw sale
c) Delay sale

5. List of Federal, State, and local agencies from which comments have been received:

Secretary of Transportation

Secretary of Commerce

Dir., Office of Emergency Preparedness

Director, Environmental Protection Agency

Chief, Corps of Engineer
U. S. Army

Chairman, Federal Power Commission

Secretary of Health, Education and Welfare

State Planning and Development Clearinghouse, Tallahassee, Fla.

Co-ordinator for Federal-State Programs
Jackson, Mississippi

Alabama Development Office
Montgomery, Alabama

Department of the Interior

Bureau of Sport Fisheries and Wildlife

Bureau of Outdoor Recreation

Bureau of Mines

Geological Survey

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Final Environmental Impact Statement for Proposed December 1971 OCS General Lease Sale

"In the last twenty years alone, we have been able to double our consumption of energy without exhausting the supply. But the assumption that sufficient energy will always be readily available has been brought sharply into question within the last year. The brownouts that have affected some areas of our country, the possible shortages of fuel that were threatened last fall, the sharp increases in certain fuel prices and our growing awareness of the environmental consequences of energy production have all demonstrated that we cannot take our energy supply for granted any longer.

A sufficient supply of clean energy is essential if we are to sustain healthy economic growth and improve the quality of national life. I am therefore announcing today a broad range of actions to assure an adequate supply of clean energy for years ahead."

Richard Nixon
Energy Message, June 4, 1971

Among the actions proposed by the President was an acceleration of oil and gas lease sales on the Outer Continental Shelf (OCS) 1/--along with stringent controls to protect the environment--and, a published schedule for lease offerings on the Outer Continental Shelf during the next five years beginning with a drainage sale and a general sale this year. This statement outlines the Department of the Interior's proposal for the oil and gas general lease sale of 86 tracts of submerged lands offshore Louisiana, Mississippi, and Alabama. These tracts, if leased, would add 396,250 acres, an increase of about 10 percent, to the total of

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1/ That portion of the continental shelf under Federal jurisdiction, known as the Outer Continental Shelf (OCS).

3,782,796 presently under Federal lease offshore Louisiana. The proposed lease sale would be made under Section 8 of the Outer Continental Shelf Lands Act (67 Stat. 462, 43 U.S.C. sec. 1337) and regulations issued under that statute.

PURPOSE OF THE PROPOSED LEASE SALE

The U. S. is the single largest energy-consuming nation in the world, accounting for one-third of the world's total consumption. The growth in domestic demand for electric power and industrial demand for energy has caused a sustained high level of energy demand; from 1960 to 1970 demand increased at an average annual rate of 4.3 percent.

Overall Energy Requirements for the 15 Year Period 1970 to 1985 1/

	1970		1985	
	Quantity	Percent of energy supply	Quantity	Percent of energy supply
Coal (1,000 short tons) ----------	526,650	20.1	850,000	16.7
Crude petroleum (million barrels)	5,367	43.0	8,600	35.6
Natural gas (billion cubic feet)-	21,847	32.8	38,200	29.5
Hydropower (billion kilowatt-hours)	246	3.8	363	2.6
Nuclear power (billion kilowatt-hrs.)	19	0.3	1,982	15.6
		100.0		100.0

During the period 1970 to 1985, demand for total energy is expected to increase at an average annual growth rate of 4.5 percent. The demand for oil and natural gas during this period is expected to increase at a 3.2

1/ Rogers C. B. Morton, Secretary of the Interior, Statement before the Committee on Interior and Insular Affairs, United States Senate, June 15, 1971.

and 3.8 percent average annual rate, respectively. According to a Bureau of Land Management contract study 1/ at present oil import levels, Outer Continental Shelf production would have to expand from 11 percent of the total lower 48 State oil production in 1969 to from 46 to 54 percent in 1985 to meet projected demands.

On January 30, 1971, the Environmental Protection Agency proposed national air quality standards for carbon monoxide, particulate matter, sulfur oxides, hydrocarbons, nitrogen oxides, and photochemical oxidants. The standards for sulfur oxides are particularly important to consideration of offshore oil and gas leasing in the Gulf of Mexico since this is a major potential source of low sulfur fuels.

The effort to control the sulfur emission into the atmosphere has achieved some success by substituting greater quantities of low sulfur fuels for high sulfur fuels. However, the availability of such fuels is limited and often more costly. In order to overcome the deficiencies in low sulfur fuel supplies without curtailing domestic energy consumption, it is essential to develop as many low sulfur fuel sources and reserves as possible. Additionally, other actions are needed to develop methods of reducing the sulfur content of fuels, to control sulfur emission of consumed fuels, and to develop non-fossil fuel

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1/ Foster Associates, Inc., "The Demand for and Supply of Petroleum and Natural Gas from the Outer Continental Shelf of the United States", Section B - Petroleum Demand and Supply, Washington, D. C., May 1970, unpublished.

technologies. The availability of low sulfur petroleum products does not in itself assure that air quality standards will be attained. However, providing the low sulfur products to the domestic energy market does enhance the availability of low cost fuels. Sulfur extraction costs are lower if the sulfur content of the entering products is lower. This provides economic incentives to use such fuels:

I. Description of the Proposed Lease Sale

A. Reserves

The sale area under consideration includes 86 tracts 1/ totaling 396,250 acres off the eastern half of Louisiana (from the Ship Shoal area East through the Main Pass South and East area). This is an area 230 miles long with an average width of 50 miles. Three of the tracts are subject to drainage 2/; 47 tracts are in, or adjacent to, moderately developed areas 3/; and 36 tracts are wildcat tracts. 4/

Estimated Production:

	Estimated Volume	Estimated Market Value 5/
		($ Million)
Recoverable Oil Reserves	1 billion bbls.	3,500
Recoverable Gas Reserves	2 trillion cu. ft.	520

1/ The tracts are summarized by water depth, distance from shore, and expected type of production in Attachment A. Also, see attached map.

2/ Tracts subject to depletion of their oil and gas deposits from wells on adjacent tracts.

3/ Areas of current production.

4/ Tracts that are generally located five or more miles from tracts with established production.

5/ U. S. Geological Survey, Informal Preliminary Staff Estimates, Undated, Unpublished. All estimates are in 1971 dollar values.

It is estimated that the proposed leases may produce 75,000-150,000 bbls. of oil per day and 250 million - 500 million cu. ft. of gas per day by the sixth year after leasing and that the average producing life of the leases will be about 20 years. 1/

Production from OCS leases in the proposed sale area during 1970 amounted to approximately 283 million barrels of oil and 974 billion cubic feet of gas. This production represented approximately 84 percent and 41 percent, respectively, of all oil and gas produced during the year from OCS lands in the Gulf of Mexico.

B. Description of the Environment

1. Coastal Zone

The coastal area of Louisiana and Mississippi, shoreward of the proposed sale area is one of the major estuarine/delta marsh complexes in the world, and certainly the major one of the United States. The Mississippi River for thousands of years has deposited sediment over the shallow waters of the Continental Shelf to build a large expanse of coastal wetlands, waterways, and estuaries that now reach almost to the edge of the Continental Shelf at the river's mouth, where the entire area is dominated by the Mississippi River Delta. Elsewhere, the adjacent marshes and estuaries are separated from the Gulf of Mexico by a system of barrier islands extending as an intermittent chain across much of the coasts of Louisiana and Mississippi. The combined estuarine areas of Louisiana and Mississippi include 3.9 million acres

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1/ U. S. Geological Survey, Informal Preliminary Staff Estimates, Undated, Unpublished.

of estuaries and 4.0 million acres of coastal marsh or 62 percent of the entire estuarine/coastal acreage of the Gulf of Mexico. This represents about 28 percent of the total combined estuarine/coastal marsh area of the entire contiguous United States.

Comparison of Marsh and Estuarine Acreage in the Coastal Zone Adjacent to the Sale Area (Louisiana and Mississippi) with that of the Gulf of Mexico and the Contiguous 48 States 1/
(Millions of Acres)

Habitat	Sale Area	Gulf of Mexico	United States
Coastal Marshes	4.0	5.7	8.2
Estuarines & Lagoons	3.9	7.0	20.1
TOTAL	7.9	12.7	28.3

Most of the estuaries are extremely shallow, being only a few feet deep, have a tidal range of about two feet and, for the most part, are relatively turbid because of the great volumes of sediment laden tributary freshwater received from the uplands. The transition of the estuaries and coastal marshes into the adjacent waters of the Continental Shelf is without clearly defined boundaries. This condition is essential to the survival of many of the living aquatic resources of the coastal zone which must occupy both the estuaries and the open waters of the Gulf of Mexico.

1/ Chapman, Charles R., "The Texas Water Plan and Its Effect on Estuaries," In: A Symposium on the Biological Significance of Estuaries. Sport Fishing Institute, Washington, D. C., March 1971.

2. Geologic Framework 1/

At its present stage the continental shelf in the northern Gulf of Mexico extends over 100 miles off the Texas and Florida coasts, but becomes very narrow or absent off the Mississippi River where the delta has prograded 2/ across the entire shelf. The continental slope seaward from the Mississippi delta is smooth and continuous, and has the form of a cone (the "Mississippi cone") that flattens seaward, and extends southeastward to the Straits of Florida.

Terrigenous 3/ silt and clay mantle the area off the Mississippi delta. A seismic profile down the slope of the Mississippi cone, south of Mobile Bay, Alabama shows that the prograded layers are truncated and a thin series of horizontal beds overlie the erosional surface. Another profile, down slope from the Main Pass area, shows irregularities interrupting the general structure which may be caused by gravity sliding or slumping. Both profiles show characteristic dome-shaped structures that are commonly bounded by faults. 4/ These are diapiric 5/ structures which are probably salt domes.

1/ Except where otherwise indicated, this section is largely from a report by E. Uchupi, and K. O. Emory, "Structure of Continental Margin off Gulf Coast of United States", Am. Assoc. Petroleum Geologists Bull., Vol. 52, July 1968, pp. 1162-1193.

2/ Shoreline showing a regular seaward movement due to sedimentation.

3/ Sediments derived from the destruction of pre-existing rocks on the earth's surface.

4/ A fracture, along which there has been relative displacement of the two sides parallel to the fracture.

5/ A structural fold in which a mobile core, such as salt, has injected or pierced the overlying rock.

The continental shelf west of the delta is blanketed by terrigenous sediments that grade from sand near the shore to silt and clay offshore. The sedimentary embankment which forms the continental margin off this area was formed by prograding and upbuilding, but it has been altered by the intrusion of masses of salt or mud. The basin areas between the intrusions received sediment from the Mississippi and other rivers and from the contemperaneous diapiric structures that adjoin the basins.

During an earlier period (lower Cretaceous 1/) in geologic time, coral reefs were built, forming an organic barrier which almost completely surrounded the Gulf of Mexico. While the reefs were active, a thick sequence of shallow water deposits probably accumulated within the reef barrier. After the reefs died, sediment upbuilding and prograding formed the sedimentary enbankment of the present continental shelf and upper slope.

The depositional history of the continental shelf in the northern Gulf of Mexico makes it one of the most productive oil and gas bearing areas in the Western Hemisphere.

The area of the proposed sale is on Federally owned submerged lands offshore Louisiana. There is a wide variation in the type of geologic structure which would be offered in this sale. Most of the obvious

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1/ The third period of the Mesozoic era, approximately 135 million years ago.

structures, such as shallow salt domes, 1/ have been leased in previous sales. Geophysical data 2/ indicate 35 separate structures or areas of possible hydrocarbon traps widely dispersed over the sale area. The majority of the structures in the lease area are a variety of deep-seated shale domes 3/ and fault closures 4/.

Although the northern Gulf of Mexico is not now a siesmically active area, both shallow and deep faulting have occurred. Sediments in the lease area overlying the potentially first productive formation are relatively thick, generally in excess of 2,000 feet. Further geological and geophysical data indicate that abnormal pressure zones are below 5,000 ft. in depth except in one tract where it is in excess of 2,000 ft. 5/

1/ A structure resulting from the upward movement of a salt mass, and with which oil and gas fields are frequently associated.

2/ Based upon a geological and geophysical data available to the Geological Survey.

3/ A dome or anticline composed of shale.

4/ Dislocation and closure by displacement of a once continuous bed of sediment through which oil may have migrated from a source bed.

5/ Based upon geological and geophysical data available to the Geological Survey.

The strata in the proposed sale area are represented by sediments thought to be favorable for the occurrence (and accumulation) of oil and gas. Production is expected at depths between 3,000 and 20,000 feet. Of the 86 tracts, 17% are expected to be gas productive, 50% are expected to be oil productive; and the remaining 33% are anticipated to have both oil and gas potential.

3. Weather Patterns 1/

The northern Gulf of Mexico lies, generally, in a zone of transition between tropical and temperate weather patterns. The climate is mild (mean temperature 69 degrees F.) and the area receives considerable precipitation (55 inches annually).

During the summer and early autumn the Azores-Bermuda high pressure zone is the dominant atmospheric feature in the North Atlantic. This high pressure zone generates the prevailing tradewinds which drift westward over the Atlantic and Caribbean and into the Gulf of Mexico. Storms and tropical cyclones which are generated in the Gulf of Mexico, the Caribbean, or the equatorial Atlantic are driven toward the U. S. coastal areas by the trades during the warm season. Under certain conditions these disturbances increase in size, speed, and intensity until they become hurricanes, with winds exceeding 74 miles per hour. Most

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1/ See, U. S. Environmental Science Services Administration (ESSA), Some Devastating North Atlantic Hurricanes of the 20th Century, Washington, D. C., 1970. Also, ESSA, Hurricane, Washington, D. C., U. S. Government Printing Office, 1969. Also see, U. S. National Oceanic and Atmospheric Administration, Hurricane Information and Atlantic Tracking Chart, Washington, D. C., U. S. Government Printing Office 1971. (NOAA/PI-70023)

hurricanes occur in August, September, and October, but the six-month period from June 1 to November 30 is considered the "hurricane season" in the Gulf of Mexico.

During an average year, there are fewer than ten tropical cyclones, of which about six develop into hurricanes. These cause the death of 50 to 100 persons between Texas and Maine and result in property damage exceeding $100 million.

The prevailing winds in the northern Gulf of Mexico are easterly (NNE-SSE) during the spring (March-May) and early winter (September-December). In the summer (June and July) winds blow from the southwest and northwest. During January, February, and August, winds from the east are only slightly more predominant than winds from the south to northwest. Monthly averages of wind velocities in the area over a four year period, range from a maximum of 13.1 mph in March to a minimum of 7.6 mph in June. 1/

The wind speeds and directions shown above are derived from averaged or resultant data 2/ and do not necessarily convey dynamic conditions imposed by local fronts, storms, or hurricanes.

1/ Scruton, P. C., "Oceanography of Mississippi Delta Sedimentary Environments", Am. Assoc. Petroleum Geologists Bull., Vol. 40, December 1956, pp. 2864-2952.

2/ The single vector that is the sum of a given set of vectors.

4. Hydrography

Major water currents in the northern Gulf of Mexico are influenced principally by the deep water circulation which is dominated by the Yucatan Current. Circulation over the continental margin is governed by the loop current which turns clockwise after making the meridional transverse from Yucatan Channel towards the Mississippi Delta. The current may divide south of the delta and flow west and east or turn towards the east in its entirety. In either event, eddies having characteristic diameters of 62 miles, may be formed which migrate along the shoreward flank of the loop current. These eddies may be cyclonic (counter clockwise) or anticylonic (clockwise) and assert considerable influence on the direction and velocity of nearshore waters. The effects of the loop current on shelf and nearshore waters are more pronounced during the warm season than in the winter months. 1/

A report by P. C. Scruton, more pertinent to the near shore waters around the Mississippi delta, describes in more detail a north directed, semi-permanent current south of the delta. 2/ The persistent northward drifting current is opposed to the wind during half of the year and favored by it during the other half. The semi-permanent current is only modified by local conditions and its net effect is to prevent or limit southward movement of Mississippi River discharge. As a consequence, the river

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1/ Gaul, Roy, Circulation Over the Continental Margin of the Northeast Gulf of Mexico, College Station Texas, 1967, 172 pp. (Thesis (Ph.D.) Texas A&M University, Department of Oceanography).

2/ Op. cit., p. 2905.

water is directed to the east or west by wind and tidal currents. The influence of winds on water circulation in the nearshore area is principally shown by monthly or seasonal resultant data which tends to mask short-term conditions. Scruton found a strong relationship between resultant wind speed and direction and resultant surface current speed and direction. His data on the effect of river discharge suggests that current speed is increased by river discharge in favorable areas but that river discharge exerts little influence on primary determination of current direction.

In summary, current patterns around the Mississippi Delta, as with other similar areas, "are extremely complex and are highly variable, both from place to place at any one time and from time to time at any one place."

5. Ecology

The Gulf of Mexico is defined ecologically as a high energy system in which the naturally generated energy supply is sufficient to maintain a large and diverse population of plant and animal life. The fortunate combination of warm water temperatures, shallow depths, and the rich nutrient systems of estuaries and coastal marshes makes the Gulf of Mexico the most productive fishing region of the United States.

The extensive shallow water area of the Continental Shelf provides a broad expanse of nutrient laden substrate which tends to concentrate commercial species of fish where they can be caught readily. The ex-

tensive estuarine coastal marsh areas (7.9 million acres), the greatest among the contiguous States, are vital to fish and wildlife resources in providing a valuable source of food, nursery habitat for many species of fish and shellfish, and spawning areas for others. Similarly, food and shelter also are available in abundance for migratory waterfowl and other wildlife.

II. Current Multiple-Use of the Area

A. Recreation Resources

Louisiana and Mississippi possess abundant natural resources which make them highly attractive for vacation and other recreation purposes. Louisiana, with its 397 mile shoreline, has the longest shoreline of any Atlantic or Gulf Coast state except Florida. The coastline of Mississippi is approximately 100 miles long. The coastal regions of both States contain millions of acres suitable for outdoor recreation. In the coastal area of Mississippi, all but 12,000 acres are in public ownership. 1/ About 90 percent of the available beach areas of both states are along the Gulf of Mexico. Numerous marinas and boat launching facilities in the estuaries and sounds provide access to the coastal waters.

There are almost 2,500 islands of 10 acres or larger in Louisiana State waters. Mississippi waters contain 128 islands of at least 10 acres. 2/ The islands are used for recreational purposes but have remained undeveloped because of their isolation and because of threats from periodic tropical storms.

In 1970, 2.4 million people lived in the coastal area of Louisiana (includes the city of New Orleans and the counties or parishes adjacent

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1/ State of Louisiana, "Comprehensive Outdoor Recreation Plan 1970-1975," Baton Rouge, June 1969. Also, State of Mississippi, "Statewide Comprehensive Outdoor Recreation Plan," Jackson, 1969 and updated in 1970.

2/ U. S. Bureau of Outdoor Recreation, "Islands of America," Government Printing Office, August 6, 1970, p. 95.

to the coastline) and over 300 thousand people lived in the coastal area of Mississippi. This represents 61% of the total population of Louisiana and 13% of the population of Mississippi. 1/

1. Federal Areas

The major Federally controlled recreation area in the Gulf of Mexico is the Gulf Islands National Seashore 2/, a new national facility extending over 150 miles along the coastline from Florida to Mississippi. The National Seashore includes Santa Rosa Island and the Eastern half of Perdido Key off west Florida. In Mississippi, it includes Petit Bois, Horn, and Ship Islands and the Davis Bayou area of the Mississippi mainland.

The National Seashore provides nesting grounds for terns, herons, egrets and other colonial birds. The islands support large winter concentrations of blue and snow geese, many species of ducks and other water birds and are a key part of the Mississippi Flyway. Terrestrial mammals consist of a few mainland species that have been able to adjust to the barrier island environments.

Historical markers of the Seashore consist of various coastal fortifications dating from early Spanish occupation. The area offers almost unlimited opportunities for camping, picnicking, fishing, swimming, skin-diving, water-skiing, boating, bird watching and beach combing.

1/ Louisiana and Mississippi Comprehensive Outdoor Recreation Plans, op. cit.

2/ Authorized January 1971, under P.L. 91-660 (84 Stat., 1967).

Current recreational use of the area is most concentrated in the vicinity of Fort Pickens State Park, Florida, and Fort Massachusetts on Ship Island, Mississippi.

The Seashore is of prime recreational importance to the seven state region of Florida, Louisiana, Arkansas, Tennessee, Mississippi, Alabama, and Georgia, containing 23 million people. More than 10 million people live within 250 miles of the area, but it is anticipated that many visitors from other States in the East and Midwest will be attracted to the area. Visitation is expected to exceed 3.5 million within five years, eventually increasing to 10 million annually. 1/

Other major Federal holdings in the coastal area of Louisiana are the Sabine, Lacassine, Delta, Shell Keys, and Breton Island National Wildlife Refuges. While the major purpose of the refuges is to provide migratory waterfowl habitat, they also provide habitat for many other wildlife species as well as significant opportunities for recreation.

2. State Areas 2/

State owned recreation land along the coast in both Louisiana and Mississippi includes wildlife refuges and management areas, historic monuments and State parks. Wildlife Refuges are Rockefeller, State,

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1/ Estimates of recreation use are by the National Park Service.

2/ Louisiana and Mississippi Comprehensive State Outdoor Recreation Plan, op. cit.

and Marsh Island. The Paul J. Rainey Refuge is a private holding. State waterfowl management areas include Wisner, Pass-A-Loutre, and Biloxi. The State of Mississippi manages Magnolia State Park, the Mississippi Coast Sand Beach and Fort Massachusetts. Other state-owned or private recreation areas include: Grand Isle and Chandeleur Island in Louisiana and Dauphine Island in Alabama.

B. Wildlife Resources

The barrier islands, sounds, deltas, bays, marshes, and other wetlands of coastal Louisiana and Mississippi are important wildlife habitat, as are the adjacent forest and agricultural lands and the nearshore waters of the Gulf of Mexico. The coastal wetlands and estuaries harbor some of the largest concentrations of waterfowl, wading birds, colonial birds, and fur animals to be found in the Nation. The shallow coastal waters of the Gulf of Mexico are used extensively by diving ducks and colonial birds. 1/

1. Waterfowl

The coastal region of the Mississippi is the southern end of the Mississippi Flyway. Waterfowl exist there in great variety and abundance, particularly between October and March when great concentrations of wintering birds are present. Five National Wildlife Refuges and seven State or private wildlife refuges or waterfowl management areas are located in this region. In 1971, the Winter Waterfowl Survey con-

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1/ Louisiana Wildlife and Fisheries Commission, Biannual Reports, Baton Rouge, 1970. Also, U. S. Department of the Interior, Assistant Secretary for Fish, Wildlife and Parks, "Interim Evaluation of Environmental Impact from the Chevron Company Fire and Oil Spill Off Coastal Louisiana, February and March 1970," unpublished report 9/19/70.

Bureau of Sport Fisheries and Wildlife and the Louisiana Wildlife and Fisheries Commission estimated the population of waterfowl to be about 6.3 million birds: 4.1 million ducks, 1.7 million coots, and .5 million geese. This population included over 1 million diving ducks which use the offshore waters of the Gulf of Mexico extensively. Peak populations of more than 1/2 million ducks and 150 thousand geese were observed on the National Wildlife Refuges of the area. Migratory waterfowl support about 2 million man-days of local hunting annually. 1/

The migratory birds are protected by treaties with Great Britain (Canada) and Mexico. The Migratory Bird Treaty Act of 1918 obligates the United States to preserve and manage existing populations of all migratory bird species. This responsibility is exercised by the Department of the Interior through the Bureau of Sport Fisheries and Wildlife in cooperation with the various States. The coastal area, associated with the Mississippi River Delta in particular, is a key to the successful management of waterfowl by providing suitable wintering habitat at the end of the Mississippi Flyway.

2. Other Birds

Colonial birds such as gulls and terns, use the offshore barrier islands extensively for nesting and feeding.

1/ Data based upon information made available by Bureau of Sport Fisheries and Wildlife, Department of the Interior.

Wading birds in a great variety of species are found throughout the region. Many species winter in the area; some species are present only during the summer and nesting period; and others are year-round residents.

Shorebirds, e.g. willets, plovers, and sandpipers, nest on the offshore islands during the summer. Large population of rails and gallinules nest in the marshes during the summer. Snipe are present in large numbers during the winter.

3. Fur Animals

The coastal marshes of the Mississippi Delta support large populations of fur-bearing animals. Louisiana is the Nation's leading fur-producing State. During the 1969 season, 3,600 trappers caught more than 1.8 million nutria, muskrat, mink, raccoon, and otter; the pelts yielded about $6 million. An additional $1.1 million was received for the carcasses of nutria and muskrat. 1/

4. Other Wildlife

Alligators, song birds of many varieties, rabbits, and deer are found extensively throughout the entire coastal region. The alligator, an officially recognized endangered species, is limited almost exclusively to the waterfowl refuges.

1/ Louisiana Wildlife and Fisheries Commission, op. cit.

C. Fishery Resources

In 1970, Louisiana commercial fishermen harvested 1.1 billion pounds of commercial fish and shellfish. This was larger than the catch of any other State. Commercial catches landed in Mississippi totaled 0.3 billion pounds of commercial fish and shellfish. Much of the Mississippi commercial fish and shellfish catch comes from Louisiana waters or was nutured in the Mississippi River Delta estuaries as juveniles. The Louisiana and Mississippi fishermen received a record $71 million for this harvest. The average annual Louisiana and Mississippi commercial fish catch over the past 10 years has been 1 billion pounds. 1/

Many of the same fishery resources that contribute to the commercial fisheries also support a very large coastal recreation fishery for finfish, shrimp, and crabs. It is estimated that these provide 9.0 million man-days of sport fishing annually. Average recreational catches are estimated to be almost 6.0 pounds of finfish per man-day of fishing. 2/ Sport crabbing and shrimping yield even greater catches.

The distribution and life history of the fish and shellfish of the Louisiana/Mississippi coastal zone vary between species but general groupings, with some overlap, can be identified. On the basis of these

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1/ U. S. Department of Commerce, NOAA, Marine Fisheries Service, Fisheries of the United States, 1970, Washington, D. C., Govt. Printing Office, 1971 (current Fishery statistics CFS-5600).

2/ Louisiana Wildlife and Fisheries Commission, op. cit. Also, based upon information provided by the Bureau of Sport Fisheries and Wildlife, Department of the Interior.

characteristics, fishery species are classed as resident, semi-catadromous, or seasonal migrant. (These terms are defined in the following sections).

1. Resident Species

Oysters, blue crabs, and spotted seatrout complete their life cycle in estuaries and are dependent on this zone most of the time, although blue crabs and spotted seatrout may, for short times, venture into the shallow coastal waters. All three species contribute significantly to the commercial fishery, and spotted seatrout and blue crab are also sought by recreation fishermen.

Since the advent of the offshore oil and gas activities other resident species have become concentrated around the drilling structures. Among these are: red snappers, groupers, trigger fish, spade fish, giant sea bass, pompano, and many smaller species. Speculation that these species and other larger, seasonal game fish, such as sailfish and marlin, have only appeared since the offshore oil industry become active, is erroneous. The platforms create artificial environments which attract and concentrate many predatory species, providing favorable fishing sites for sportsmen and commercial snapper fishermen. While this intense concentration of species, in lieu of the more random distributional patterns, is considered in a favorable light by fishermen, the long-term effect on predator-prey relationships is not known.

2. Semi-Catadromous

Semi-catadromous species spawn in the Gulf of Mexico; the young migrate to their estuarine nursery area, where they grow to sub-adults; then, they return to the ocean where their life cycle is completed. Some species may return to the estuaries for short periods as adults. Major species include white shrimp, brown shrimp, menhaden, Atlantic croaker, spot, black drum, red drum, sand seatrout, southern flounder, and saltwater sheepshead. Most of these species contribute significantly to the commercial fishery and, except for menhaden, are also caught in great numbers by sport fishermen.

The Louisiana/Mississippi commercial fishery is, for the most part, a shallow-water fishery, i.e., 60 feet or less. Virtually all of the species caught are taken in coastal waters and in bordering estuaries. Though many species contribute to the sport and commercial fisheries, two groups are of outstanding commercial importance: the shrimp and industrial fish, such as menhaden.

The shrimp spawn offshore, brown shrimp in waters as deep as 275 feet and white shrimp generally in waters shallower than 120 feet. Most commercial shrimping takes place in waters less than 60 feet deep. In 1970, of the 168,000 fishing trips recorded, 90 percent occurred in coastal waters and estuaries less than 30 feet deep. More than 70 percent of the almost 120 million pounds of shrimp caught were taken from waters less than 60 feet deep, and 56 percent were taken from waters

less than 30 feet deep. Table 1 describes shrimp fishing and catches by water depths. 1/

The industrial fishery (producing fish for meal, oil and pet food) is the largest volume fishery in the United States. Menhaden, accounted for more than 1.1 billion pounds of the total Louisiana and Mississippi catch in 1970, or about 79 percent of the total 1.4 billion pounds landed. 2/ Virtually all menhaden are caught in waters shallower than 60 feet, and much of the fishing takes place within the State waters. In addition to the menhaden, small croaker, spot, and sea-trout, lizard fish, ribbon fish, and several other species are caught and processed for industrial use, principally pet food. Most of these fish are also caught in waters shallower than 60 feet, although, particularly in the winter months, the fishery will extend into deeper water.

All of the other fish caught for food are harvested in relatively shallow waters, generally in waters less than 30 feet deep, comprising the shallow nearshore Gulf waters and estuaries.

3. Seasonal Migrant Species

The seasonal migrants generally reside in the nearshore waters of the Continental Shelf during the summer season, and some may forage briefly in the estuaries. They appear in late spring as the waters warm and

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1/ U. S. Department of Commerce, NOAA, Marine Fisheries Service, op. cit.

2/ Ibid.

Table 1 - Comparison Between the Proposed Area of Sale & Shrimp Fishing and Catches, 1970

Item	Water Depth in Feet for Coastal Louisiana and Mississippi 0-30	31-60	61-90	91-120	121-150	151-180	181-210	211-240	+240	Totals
Proposed Sale										
Number tracts	2	1	3	5	11	4	10	8	42	86
Miles from shore	11-12	21	10	8-35	4-40	5-23	5-57	5-48	4-69	
Acres (thous.)	10.2	5.0	9.0	20.3	48.7	17.8	41.8	37.5	207.8	397.9
% of total	2.5	1.3	2.3	5.1	12.2	4.5	10.5	9.4	52.2	
Shrimp fishing										
Number trips (1,000)	149.7	10.6	2.6	1.8	1.5	1.5	0.5	0.2	0.1	168
%	89.9	6.2	1.5	1.0	.8	.9	.3	.1	--	
Boat days (1,000)	70.6	24.3	8.9	7.0	5.9	6.9	2.5	0.6	0.2	126
%	55.7	19.2	6.8	5.5	4.6	5.4	1.9	.5	.1	
Catch (in millions of pounds*)										
Brown	34.7	4.5	6.3	5.9	5.1	6.9	2.9	1.0	0.2	67.5
White	29.5	14.7	3.7	0.4	0.2	0.04	0.02	0	0	48.6
Other	3.0	0.2	0.08	0.03	0.06	0	0	0	0.02	3.4
Total	67.2	19.4	10.1	6.3	5.4	6.9	2.9	1.0	0.2	119.5
%	56.2	16.2	8.4	5.3	4.5	5.8	2.4	.8	.02	
Pounds (per day) per boat	954	799	1,168	930	896	1,010	1,177	1,660	1,234	

* Catch figures are in round or live weights.

depart as the water temperature declines in the fall. They either winter in the warmer offshore waters of the Gulf of Mexico or migrate to warmer coastal waters off Mexico or southern Florida. Some spend considerable time in the vicinity of the oil and gas platforms. Major species are the spanish and king mackerel, tarpon, ladyfish, several species of jack, bluefish, and cobia. Other species found in the offshore waters include marlin, sailfish, wahoo, and a variety of tuna, sharks, skates, and rays. At this time, none are important as major commercial species in Louisiana and Mississippi, but most are sought by recreation fishermen.

III. Environmental Impact of the Proposed Sale

A. Probable Impact of the Proposed Leasing Action

The area of production and transport is considered to be not only the proposed sale tracts, but also the adjacent marine and coastal areas of the Gulf of Mexico. Issuance of leases may have an impact upon the environment in three principle ways: (1) debris from oil and gas drilling operations, (2) construction of platforms, pipelines and other structures, and (3) pollution from an oil spill.

1. Debris

The present regulations governing oil and gas operations on the OCS strictly prohibit dumping of debris on the Shelf. Therefore, little or no impact on the environment from debris is expected. In the past, prior to the issuance of the present regulations, there have been indications that debris (as well as submerged structures) has damaged or interferred with fishing gear and imposed added expense and lost time to fishermen.

2. Structures

At the present time, approximately 1,120 platforms and other structures, 3,942 holes with 6,415 oil and gas completions and approximately 2,700 miles of pipeline serving 29 receiving stations on shore are located in the proposed lease sale area from Ship Shoal through Main Pass South and East.

It is estimated that 75 to 125 additional structures may be necessary to develop the proposed tracts. This would increase the present number of platforms in the area by 7 to 11 percent. The structures would remain for the productive life of the lease (about 20 years). Under existing regulations, they would be removed when production ceases.

Under some conditions, structures have an adverse effect on commercial fishing activities. The traditional fishing grounds are becoming less accessible to commercial fishermen because of the increasing number of platforms. Depending on currents and underwater obstacles, an offshore structure can remove substantial areas of trawling and purse seining grounds. Heavy concentrations of platforms often makes trawling and purse seining difficult over large areas.

Of the 86 tracts proposed in this sale, 26 are located in water depth less than 180 feet and 3 are within 60 feet. Since 90 percent of white shrimp are caught in water depths of 0 feet - 90 feet; and menhaden, 90 percent of Louisiana's fish catch by weight, is usually caught within the 60 feet isobath, only minor conflicts with commercial fishing are anticipated from the proposed sale.

Approximately 40 new pipelines totaling 260 miles, would be required as a result of the proposed sale. Nine of the pipelines would be major trunk lines to shore (1 in the South Timbalier Area, 5 in the South Pass Area and 3 in the Main Pass Area).

Dredging operations, during pipeline installation, would have an impact on certain marine species, particularly organisms attached to the bottom and species that feed through a filtering web which can become clogged by suspended sediments. The impact of the pipelines would be greater in the marshes and coastal wetlands.

Oil and gas platforms can be an aesthetic distraction to recreation areas, particularly high quality national recreation areas and seashores or wilderness areas. In the proposed offering, 10 of the 86 tracts are within 5 miles of shore. The nearshore tracts do not front on shoreline areas of heavy recreation use.

3. Oil Pollution

The third possible type of impact upon the environment is pollution from oil spillage. Oil spillage can occur in several different forms. It can take the form of a major oil spill of extreme proportions, such as that in the Santa Barbara Channel in early 1969, or in the form of minor spills, perhaps in a series of such spills. Major efforts are being made to improve technology and equipment which will prevent or minimize pollution damage should a spill occur.

Both short and long term effects on the environment can be expected, either from a major spill or from a series of minor spills. The short-term effects of oil pollution, both obvious and subtle may seriously damage the marine biological community in the area where the pollution occurs, whether it is in an estuarine zone or in shallow or deep waters. It is more conspicuous in estuarine and shallow waters, but the effect is also felt in deep waters. 1/

Damage from oil spills is obvious where adult organisms are affected, but detection of damage is often delayed when microscopic organisms and smaller life stages of larger organisms are affected. In the latter case, the loss of larvae of shrimp, oyster, fish, or other planktonic organisms, if severe enough, might reduce or eliminate a generation of major organisms. This is of particular concern if pollution occurs in shallow waters where these organisms reproduce and/or pass through their early life stages. 2/ In the deepest regions of the Gulf, owing to the comparative simplicity of the biological system, any pollutant introduced could have a pronounced impact although it might be buffered by the large volumes of water involved. Plant and animal life of the deeper regions are not as diverse as those found in shallower regions due to a combination of factors associated with the penetration of sunlight, nutrient supply, and temperature conditions of the deeper waters.

1/ Blumer, M., "Oil Pollution of the Sea", Oil on the Sea, David P. Hoult (ed.), Plenum, New York, 1969, pp. 6-12.

2/ Goldacre, R. J., "Effects of Detergents and Oil on the Cell Membrane" Field Study Council, Supplement, Vol. 2, p. 131 (1968).

Several major studies and reports have been done in recent years attempting to assess the effect of an oil spill in a marine environment. Findings from such studies have varied from conclusions that no permanent damage has occurred to conclusions that oil has done great harm both immediately and over the longer term. One report 1/, dealing with the 1969 oil spill in the Santa Barbara Channel, presents the results of a 12 month field study aimed at determining initial effects of the pollution and gaining insight into the longer term effects of the pollution and the rates of recovery and recolonization of the ecosystem. The study was complicated by three factors. First, the area is noted for natural oil seepage which made it difficult to obtain comparative data in regard to "normal" conditions in the area before or between the platform spills. Secondly, the largest recorded flood in Southern California history occurred almost simultaneously with the spill resulting in large runoff of fresh water and sediments into the Santa Barbara Channel, creating reduced salinities, high sedimentation rates, and a probable increase in pesticide levels, which washed into the Channel from citrus groves. The final complicating factor was the overall general lack of knowledge of the ecology of the area.

The general conclusions of the study were that the damage to the biota was not widespread, but was limited to several species, and that the

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1/ Straughan, Dale, Kolpack, Ronald L., et. al., Biological and Oceanographical Survey of the Santa Barbara Oil Spill, 1969-1970, Vol. I and II, Allan Hancock Foundation, University of Southern California, (Sea Grant Publication No. 2: 1971).

area is recovering. The study hypothesizes that "the biota of the area had a high tolerance to oil built up by almost continuous exposure to small amounts of similar oil from natural seeps over long periods". 1/ Further, "the presence of oil in the area may have resulted in a normally high population of oil degrading bacteria." 2/

Other factors relate to the final disposition of the spilled oil. It is stated that the slow solubility and surface floatation of the crude oil allows for the rapid loss of volatile compounds which reduce the potential toxicity of the oil. In volume two of the report, geological studies have revealed that "much of the oil deposited at the sediment-water interfaces was removed from the area of initial deposition and was retransported into deeper water". 3/

The report indicates that different types of oil will vary in this effect and that "A crude oil such as that found in Santa Barbara is far less toxic than a light refined oil. 4/

The hypotheses presented in the study, relating to oil tolerant species and oil degrading bacteria may also be given consideration in the oil production areas of the northern Gulf of Mexico.

Another report directly relating to the area under consideration was an "Interim Evaluation of Environmental Impact From the Chevron Company

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1/ Ibid., Vol. I, p. 411.

2/ Ibid., Vol. II, p. 343.

3/ Ibid., Vol. II, p. 343.

4/ Ibid., Vol. I, p. 414.

Fire and Oil Spill Off Coastal Louisiana, February and March 1970". 1/ This report did not establish that the Chevron oil spill caused damage to the surrounding area: "Efforts to evaluate the environmental effects of the spill were generally limited to detecting immediate impact on commercial fishery species. Ecologically significant damage to the biota could have occurred and not been detected."

A more recent report 2/ discusses the results of a chemical and biological analysis of a relatively small oil spill (650-700 tons of number 2 fuel oil) which occurred in November 1969 off West Falmouth, Massachusetts, in Buzzards Bay. Unlike earlier studies on oil pollution in the ocean which were largely based on reports of the visible effects of oil spillage, the Blumer study extended far beyond the period of visible evidence. The study reports that the contaminated region in Buzzard's Bay expanded steadily after the accident. Eight months after the spill, the pollution covered an area many times that first affected. The oil destroyed marine life (95% mortality of adult organisms) in the immediate area of the spill within the first few days. As the oil spread out across the bottom of the bay it did not lose its toxicity. As of May 1970, eight months after the spill, contamination had ruled out commercial shellfishing in the nearby Wild Harbor River for at least two years, according to the report.

The study notes that, despite the low density of oil, it may mix with water, especially in a turbulent sea. Thus, the hydrocarbons can be

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1/ U. S. Department of the Interior, Assistant Secretary for Fish, Wildlife and Parks, "Interim Evaluation of Environmental Impact From the Chevron Company Fire and Oil Spill Off Coastal Louisiana, February and March 1970", unpublished report 9/19/70.

2/ Blumer, M., et. al., "A Small Oil Spill", Environment, Vol. 13, No. 2, March 1971, pp. 2-12.

dispersed through the water column and reach the sea bottom, particularly if weighted down by mineral particles. The hydrocarbon compounds are adsorbed by the bottom sediments and persist for long periods, killing larvae organisms which settle on the sea bottom and in the marshes. In addition, revitalization of bottom areas will probably be further hampered by oxygen depletion caused by oxygen-requiring bacteria that degrade oil.

One of the conclusions drawn from the study is that the importance attached to the evaporation of toxic hydrocarbons has been overestimated "It has been thought that many of the immediately toxic low-boiling aromatic hydrocarbons are volatile and evaporate rapidly from the oil spilled at sea. This has not been the case at West Falmouth, where the low-boiling hydrocarbons found their way into the sediments and organisms." 1/

Marine life may also be affected by efforts to remove surface oil. Emulsifiers, as well as natural storm action, remove oil from the surface by redistributing it as minute droplets throughout the water column. In this condition, oil is more susceptible to biological and chemical degradation, although in combination with such chemicals it also usually is more toxic. Furthermore, the oil treating chemicals them-

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1/ Ibid., p. 11.

selves have been found to be more toxic than crude oil in many instances. 1/

Regulations and enforcement of standards to prevent oil spills are stronger today than ever, and are under constant review to identify improvements that may be made. Since Federal prosecution of regulation violations, it has become apparent that non-compliance can be very costly. The greater efforts today exerted by both Government and industry to avoid pollution should decrease the instances of major oil spillage. The possibility of such spills, however, cannot be ruled out. Spillage has been categorized in three main ways: minor spills from operations and unidentified sources; discharge of waste water contaminated with oil; and major accidents.

Minor Spills

During the first quarter of 1971, approximately 370 minor spills involving 510 barrels (42 gals./barrel) of oil were recorded from OCS oil and gas operations in the Gulf of Mexico. The majority of these spills (271) involved one barrel of oil or less. Ninety-six of the recorded spills involved 1 to 15 barrels each totaling 169 barrels. Only 3 spills exceeded 15 barrels of oil (1 of 20 barrels and 2 of 25 barrels). An additional 299 oil slicks from unidentified sources were sighted. These slicks involved an estimated 750 barrels of oil and are not positively related to offshore drilling. There is evidence of natural

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1/ See - Annex 10, National Oil and Hazardous Materials Pollution Contingency Plan, June 1970 (Federal Register, 6/22/70).

oil seepage in the Gulf of Mexico which dates back to 1906 1/, long before oil development activities were initiated, and it is quite possible that seepage still persists in oil prone areas.

Waste Water

Waste water from oil and gas production can also be an important source of oil pollution. Approximately 1 million barrels of oil per day is presently being produced from some 1,800 structures in the OCS in the Gulf of Mexico. Waste water from this production is discharged offshore from only about 250 of these structures. Total waste water production is about 300,000 barrels per day; 120,000 barrels per day is transported to shore and 180,000 barrels per day is discharged into the sea. The largest volume of waste water discharged at a single location is about 20,000 barrels per day. The oil content of waste water discharged in OCS operations, under the 50 ppm standard of OCS Order No. 8, can contribute as much as 9 barrels of oil per day.

Thus during the first quarter of 1971, approximately 23 barrels of oil may have been introduced into the ocean daily, either from minor spills, unidentified sources, or waste water discharge. Based on these figures, the estimated production of 150,000 barrels per day from the proposed sale might contribute an additional 3 to 5 barrels of oil per day from continuous pollution sources on the OCS.

Major Spills

During the last decade, two pipeline accidents have resulted in the spillage of 167,000 bbls of oil in the Gulf of Mexico. The largest of

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1/ U. S. Department of the Interior, Gulf of Mexico: Its Origin, Waters and Marine Life". Fishery Bulletin 89, the Fish and Wildlife Service, 1954.

these occurred, in October 1967 when a ship, dragging its anchor, broke a pipeline which disgorged 160,000 bbls of oil into the water.

An accident in the Main Pass area in February and March 1970 resulted in a spill of 30,500 barrels, of which 10% was estimated to have been recovered. Another accident in the South Timbalier area resulted in a 53,000 barrel spill. Geological Survey estimates indicate that 40% of the oil was removed from the water, with only minor amounts reaching the shore.

Over the past 10 years, 1.9 billion barrels of oil and condensate were produced from the OCS in the Gulf of Mexico. During this period, nine accidents involving drilling or producing operations resulted in the spillage of 102,500 barrels of oil. An additional 167,000 barrels of oil were spilled as a result of two major pipeline accidents. A little more than 24,000 barrels is estimated to have been recovered, the fate of the 245,000 barrels which were not recovered is unknown.

The spillage rates listed above for minor and major spills, and waste water discharge are limited to OCS operations and do not contain spillage rates which may have occurred in State waters. Nor does it approach the pollution which may occur from routine discharges of tankers and other commercial vessels which is estimated to contribute as much as three and one-half million tons of petroleum to the ocean each year. 1/

4. Pollution from Gas Condensates or Distillates

The possibility of environmental damage, and the inherent risks associated with offshore petroleum production is closely related to

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1/ M. Blumer, et. al., "A Small Oil Spill", op. cit., p. 3.

the total volume of liquid pollutants which could be introduced into the marine environment. The degree of damage is also related to other factors such as seasonal to variations in temperature, currents, and spawning activities, to mention only a few.

For this reason, gas production is, whenever possible, considered separately from oil production due to the lesser amounts of produced liquids. In general, the amount of fluids produced from gas wells is indicated by the ratio of gas to oil produced (GOR). A well having a GOR of 15,000/1 indicates an anticipated production ratio of 15,000 cubic feet of gas to 1 barrel of gas condensate or distillate. All wells with this production ratio or a lower ratio are classified as oil wells. Wells having a higher ratio are classified as gas wells and are divided into the following two categories. A ratio between 15,000/1 and 200,000/1 is designated as a "wet" gas well. Those wells with a ratio of 200,000/1 or higher are designated as "dry" gas wells. In a drainage situation such ratios can usually be reliably estimated. In this proposed action, all tracts identified for gas drainage have estimated GOR ratios of less than 15,000 to 1, which, due to their high liquid condensate production places them on a par with oil well production.

B. Analysis of Environmental Risks to Resource Use

The possibility of an accidental oil spill occurring on any one tract in the proposed Eastern Louisiana general sale is not considered to be greater than that posed by any of the other tracts except in one area which will be discussed later in this section. Development activity on any of the tracts would be within the framework

of a known array of natural and operational hazards from storms or hurricanes, equipment failure, vessel collision, or operator error, any one of which could result in a major oil spill. The probability of such incident, based on occurence of previous major oil spills on OCS lands, is low (11 in 10 yrs), but highly significant in terms of environmental mandates. As far as has yet been determined, the few previous major spills occurring in the Gulf of Mexico resulted in minimal damage. These minimal effects, however, were largely the result of a fortunate combination of hydrologic and meteorologic conditions such as favorable offshore winds and surface currents which prevented the oil slicks from reaching the extremely vulnerable estuaries and wetlands. 1/ This combination of physical factors is discounted in considering plans and impacts should another spill take place. Therefore, this section ranks each of the blocks in the proposed sale on an estimated probability of impact basis. The ranking concludes that all tracts have an equally low probability of creating a major spill. However, a numerical order of oil pollution risk is assigned to each tract, based principally on the proximity of the production site to a high value/critically vulnerable area, such as a heavy effort commercial fishing site, spawning and nursery grounds, refuges, recreation sites, estuaries, marshes and wetlands.

Close proximity of production tracts to such areas implies a low response time to implement adequate contingency measures, and assumes that under normal hydrological and meteorological conditions oil would reach the

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1/ U. S. Department of the Interior, Assistant Secretary for Fish, Wildlife and Parks, op. cit.

areas. The ranking index ranges from 7 to 1 on the basis of proximity alone. A ranking of 7 indicating a short distance (0 to 9 miles) between the tract and the high value area, allowing little time for implementing contingency measures and small dispersion of the oil. A ranking of 1 indicating a considerable distance (greater than 30 miles) between the tract and the high value area, allowing adequate time for implementing contingency measures and wide dispersion of the oil.

In this analysis, tracts ranked 7 are within 9 statute miles of a high value site. Under normal wind and water current conditions, an oil slick can be deposited on the site by surface flow or wind generated currents within 18 hours at current velocities of 0.5 knots which are normal for the area. This projection assumes that oil containment and recovery equipment cannot be brought into play this quickly, even if the spill were discovered immediately. Tracts ranked 5 are located 10 to 19 miles from high value areas. In the event of a spill, these tracts would require containment and recovery measures within 20 to 38 hours, under the conditions defined above, in order to prevent damage. Tracts ranked 3 are separated from high value areas by distances of 20 to 30 miles, and tracts ranked 1 by distances greater than 30 miles.

Tracts on the OCS are not assigned risk levels below 1, regardless of the levels of liquid pollutant produced or distance from high value areas. Development activities, either in the form of platform construction, pipeline construction, or the petroleum products transported in the pipelines will always pose some level of risk to the environment.

In addition to the proximity order, weighting factors which increase or decrease the risk level are assigned. The weighting factors consider criteria which are not adequately expressed by proximity and liquid hydrocarbon production alone. These criteria are discussed later on a tract-by-tract basis.

The following summary analysis lists all of the tracts in the proposed offering. The risk level column denotes proximity order, followed by an increased or decreased risk level (in parenthesis) where weighting factors are employed.

Summary of Area and Block Analysis

Area and Blocks	Resources Affected	Risk Level
Ship Shoal		
98 and 110	Commercial Fisheries (Ship Shoal)	7
160	Commercial Fisheries (Ship Shoal)	5
202, 320, 326, 338, 343, 344, 345, 359	Commercial Fisheries and adjacent coastal marshes and estuaries	1
South Timbalier		
195, 202, 217 314, 315, 316	Mainland, marshes and estuaries	1
Grand Isle		
58	Commercial fishing, spawning and nursery grounds, estuaries and marshes	5
65, 67, 69, 76, 84	Mainland, marshes and estuaries	3
94 and 95	Mainland, marshes and estuaries	1
West Delta		
35 and 36E½	Commercial fishing, spawning and nursery grounds, estuaries and marshlands	7
36W½, 68, 101, 113	Commercial fishing, spawning and nursery grounds, estuaries and marshlands	5

Area and Blocks	Resources Affected	Risk Level
154	Estuaries and marshlands	3
South Pass		
32, 33, 34, 73	Delta Migratory Waterfowl refuge, nursery grounds, estuaries and marshlands	7 (8)
35, 46, 47, 48, 49, 51, 52, 53, 56-57, 75, 76, 77, 78	Delta Migratory Waterfowl refuge, nursery grounds estuaries and marshlands	7
82, 83, 96	Nursery and spawning grounds, estuaries and marshlands	5
Main Pass		
73, 147, 148, 151	Breton Wildlife and Waterfowl refuges and Delta Migratory Waterfowl refuge, estuaries, and marshlands of Breton and Mississippi Sounds, spawning and nursery grounds, Gulf Islands National Seashore	7 (8)
60, 61, 138, 139, 140, 141, 146, 149, 150, 302, 303, 310, 311	Wildlife refuges, estuaries, and marshlands of Breton and Mississippi Sounds, spawning and nursery grounds, Gulf Islands National Seashore	5
304, 309	Wildlife refuges, estuaries and marshlands of Breton and Mississippi Sounds, Gulf Islands N. S.	3
219, 220, 221, 222, 223, 245, 246, 247, 261, 262, 263, 280, 281, 282	Wildlife refuges, estuaries and marshlands of Breton and Mississippi Sounds, Gulf Islands N. S.	1

C. Areas of Special Consideration

One area, containing tracts included in the proposed offering has been identified as a potentially hazardous area. Production platforms which may be located in this area could be subject to damage from sediment movement and appear to pose a greater potential for pollution than the otherwise low probability associated with platforms on other tracts.

The area in question extends from Southwest Pass to an area off Main Pass. A seismic profile 1/ off Main Pass shows features which may be caused by gravity sliding or slumping. The area is immediately adjacent to the main river passes where sediment deposition is most active. The delta slope is quite steep and is covered by a mantle of soft unconsolidated sediments, portions of which are considered to be unstable.

Recent hurricanes have caused large volumes of sediment to be relocated and during hurricane "Camille" in August 1969, three of the thirteen existing platforms off Main Pass were seriously damaged, evidently as a result of sheer forces created by the movement of large areas of the unconsolidated sediment.

Unstable zones may be present on portions of several of the proposed tracts and a soil boring program has recently been conducted to determine the presence and extent of the postulated instability. Data resulting from the boring program will identify the specific tracts and be used

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1/ Uchupi, E. and Emory, K. O., "Structure of Continental Margin Off Gulf Coast of United States", Am. Assoc. Petroleum Geologists Bulletin, Vol. 52, July 1968, pp. 1162-1193.

by the regional oil and gas supervisor, Geological Survey to determine if platforms are adequately designed to withstand physical forces that may be generated in any unstable zones, or if platforms should be located only in stable areas of the tracts.

An area designated for the highest risk potential is adjacent to the Delta/Pass-A-Loutre Refuges. These adjoining refuges provide important habitat for migratory waterfowl and various wildlife species as well. Because of their close proximity (less than 9 miles) to the refuges, tracts identified as South Pass 32, 33, 34, 73, and Main Pass 73, 147, 148, 151, are assigned weighting factors elevating them to risk level 8 in the ranking index.

D. Unavoidable Adverse Environmental Effects

Six unavoidable adverse effects from this proposed sale can be identified:

1. Some oil pollution will occur, adding to that which already exists. The recently strengthened regulations and operating orders are as stringent as technology allows at this time. Although increased Federal inspection and the large costs involved in controlling, containing and cleaning up spilled oil have combined to generate an awareness of the necessity to improve the OCS safety record, no regulation or enforcement can guaranteé that there will be no pollution from oil producing operations on the OCS. Natural disasters, equipment failure and human error could occur despite existing regulations and enforcement procedures. Federal standards will do much to widen

the margin of safety on OCS operations, but they cannot guarantee there will be no oil spillage.

2. The marine environment is rich in variety and in the forms of marine life. Pollution can affect, in varying degrees, all forms of marine plant and animal life from those that are lowest in the food chain to those at the top. The degree of pollution determines the duration and extent of the impact. A normal balance may be regained in a short period of time or the impact may be more severe and recovery -- if possible at all -- may require a span of many years. The normal "health" of the marine ecosystems in any case is disrupted and a balance is lost during the period of discovery.

Shorebirds, waterbirds, and migratory waterfowl frequently are the most obvious victims of oil pollution because they are likely to come into direct contact with it. Contamination by oil destroys the waterproof qualities of their plumage from which condition they seldom recover, even when careful rehabilitation is attempted. In the northern hemisphere, hundreds of thousands of swimming and diving birds have perished in this way, during and since World War II, and marked reduction of some nesting populations of sea birds from such mortality has been documented. 1/ Similarly, bird species are vulnerable if beaches and marshes become contaminated by oil, especially

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1/ Aldrich, J. W., "Review of the Problem of Birds Contaminated by Oil and Their Rehabilitation". Resource Publication 87, U. S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, 1970.

if vegetation and food sources are destroyed.

3. Approximately 98% of OCS oil production in the Gulf of Mexico is transported to shore by pipelines. It is estimated that nine new pipelines would be required to move the new production of oil and gas from the area proposed for leasing to the Louisiana coastal uplands for processing or redistribution. In the past, major pipelines on the Outer Continental Shelf have been buried beneath the ocean floor. Similarly, pipelines are buried in the estuaries, but in coastal marshes it has been a common practice to dredge canals in which to place them. The pipeline canals increase the ratio of water to wetlands by physically removing the coastal marshes, by facilitating drainage of freshwater necessary to maintain diluted conditions in the estuaries, and by increasing the rate of salt water intrusion from the more highly saline coastal waters. The dredging and redepositing of the displaced sediment is also destructive to aquatic plants and animals. Recent studies 1/ indicate that 16.5 square miles of marsh are being destroyed each year in coastal Louisiana by erosion, subsidence, and construction. Some of this destruction is attributable to natural cause, including hurricanes, while some 12% to 15% is due to canalization accompanying oil and gas pipeline installations and oil rig access channels.

Additional pipeline construction will contribute to further marsh destruction. The adverse effects may be either short-term

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1/ Louisiana State University, Coastal Studies Institute and Department of Marine Science, Geologic and Geomorphic Aspects of Deltaic Processes, Mississippi Delta System, Baton Rouge, La., 1970 (Hydrologic and geologic studies of coastal Louisiana, Vol. 1).

or permanent, and may be minor or serious, depending on the methods employed in laying pipelines. These effects could be substantially reduced with adequate planning. For example, pipeline corrdiors could be established so that adverse impacts are restricted to fewer locations. Where possible, pipelines could come ashore on elevated terrain to minimize damage to marshlands. Existing pipeline canals could be used wherever possible and bulkheads, properly placed, could prevent salt-water intrusion and maintain existing drainage and water-exchange routes. Pipelines could be routed around major oyster reefs, and, in crossing shallow estuarine areas, spoil banks could be located so that estuaries would not be filled or segmented.

Although these measures could help to alleviate the situation, the total problem presented by pipeline installations will require joint resolution by several different authorities. Agencies having responsibility or jurisdiction over oil and gas pipeline installation or operation are: (1) Bureau of Land Management--rights-of-way for non-producer pipelines on the OCS; (2) Geological Survey--jurisdiction over producer owned pipelines; (3) U. S. Army Corps of Engineers--issues permits for construction of offshore pipelines; (4) Department of Transportation--jurisdiction over the safety of all pipelines on the OCS; (5) Federal Power Commission--grants certificates of convenience and necessity prior to construction of Interstate natural gas pipelines; (6) Interstate Commerce

Commission--grants approval of the tariff rates of transportation of oil by common-carrier pipelines; and (7) State of Louisiana--grants rights-of-way through navigable waters under state jurisdiction.

4. The erection of more structures on the OCS may affect commercial fishing operations. The impact from platforms can be kept to a minimum, however, by only allowing those structures necessary for proper development and production of the mineral resources, and by placing them with due regard to fishing operations. Insufficient data exists on what effect the incremental discharge of oil will have on the fishery resource and its supporting food web.

5. A major spill or chronic minor spillage could affect the beaches, water areas and historic sites making them at least temporarily unuseable for recreational purposes. If such pollution incidents occurred during periods of normal heavy visitor use, loss of recreational enjoyment and use and the loss in economic benefit to the vicinity could be substantial.

Water sports, such as swimming, diving, spearfishing, underwater photography, fishing for finfish and shellfish, boating, and waterskiing would be most directly affected by an oil spill. Other marine-related activities such as beachcombing, shelling,

painting, shoreline nature study, camping, and sunbathing would be made much less attractive for an indeterminate period, depending upon the promptness and efficiency of the clean-up effort.

6. The Port of New Orleans is one of the major commercial arteries in the United States, and shipping, both to and from the port, is increasing constantly. Safety fairways have been established to permit safe passage of vessel traffic into and out of the port. Anchorage areas are similiarly designated for safety purposes. While exploratory drilling in shipping lanes is permitted with approval by the Corps of Engineers, installation of fixed structures is prohibited under 33 U.S.C. 403 and 43 U.S.C. 1333(f). Production can be initiated, however, by directional drilling from a portion of the tract outside the lane or from adjacent leaseholds outside of fairways. Despite the installation of navigational aids, the erection of additional platforms on the OCS particularly those adjacent to fairways, poses an increased hazard to shipping.

IV. Alternatives to the Proposed Action

A. Hold the Sale in Modified Form

The proposed sale could be held by offering only those tracts determined to have a lower potential for environmental risks. Those tracts believed to have high environmental risks could be deleted from the sale and considered for offering at a later date, should improved technology or other circumstances warrant.

This alternative could also allow for special stipulations on any proposed tract where additional requirements might be necessary to protect the environment or to minimize or eliminate possible conflicts with or potential damage to other resource values or commercial uses of the Gulf of Mexico and the adjacent land areas.

B. Withdraw Sale

The proposed sale could be withdrawn from consideration for leasing on the basis of possible environmental impacts. If such a decison were made, new domestic sources of clean energy would need to be developed. In the long run, new technology must be made available to produce clean energy at a cost to help offset the critical need for oil and gas; in the short run, few alternatives exist and the ones that do exist are of questionable practicability. The following possible sources of energy for short-run needs are "alternatives" 1/ to offshore oil and gas.

1/ In many cases, they are not necessarily alternatives, but are supplemental to other sources. The national energy requirement exceeds the potential of any one "alternative."

Many of these alternatives have their individual environmental effects which must be considered: however, analysis of these impacts is beyond the scope of this statement.

1. Eliminations of import quotas.
2. Increase onshore exploration and development.
3. Development of oil shale.
4. Increase nuclear energy development.
5. Increase use of low sulfur coal and/or desulfurization of coal.
6. Development of coal liquification and gasification.
7. Development of geothermal resources.
8. Development of tar sands.

While the elimination of oil import quotas could be an alternative to continued development of offshore oil and gas, such a determination involves complex factors and concepts, including national security, which are beyond the scope of this statement. The remaining alternative energy sources should best be considered as supplements, not true alternatives, in the short run (e.g. 5 to 15 years). While the development of oil shale, nuclear energy, desulfurization of coal, coal liquification, coal gasification, tar sands and geothermal resources hold great promise for the future, their impact on the energy supply will not likely be felt until after 1980, and will be dependent on environmental safeguards and technological developments. Until recently, the petroleum industry has been able to satisfy domestic demand for oil and gas from the onshore areas. With the exception of Alaska,

however, current seismic exploration techniques have not been able to identify sufficient numbers of new prospective oil and gas bearing geologic structures onshore that are suitable for further exploration or development investments. This has been reflected by a significant decline in both onshore drilling and proved reserves. In contrast, however, the geologic structures in the relatively unexplored or virgin areas are more easily identifiable using current seismic technology.

C. Delay Sale Until New Technology is Available to Provide Increased Environmental Protection

Since basically safe technology is available provided its application and use are properly regulated and controlled, there appears to be no advantage in the postponement of the proposed sale for this specific reason.

As new technology relating to safety and environmental protection is developed, it can be incorporated with the existing requirements and applied to all OCS leases so that bringing on additional production now will not generally preclude adaptation of new advances to the prospective leases.

Delay of the proposed sale could result in retarded development of energy resources.

V. Relationship Between Local Short-Term Use and Maintenance and Enhancement of Long-Term Productivity

The short-term use of the proposed sale area would be the extraction of oil and gas from those tracts which prove economically productive. However, since the total hydrocarbon reserves are finite, the extraction would also lower the long-term productivity of the oil and gas resources of the Gulf of Mexico.

Limited daily oil pollution will occur from the development of the proposed tracts. Accidents associated with oil and gas production could occur. The long-term effects of oil pollution in the marine environment are not clearly understood. Local effects of oil spills in this or other areas summarized in several reports, have been treated differently, according to the extent and composition of the products spilled and a variety of natural and physical conditions. The long-term effects of incremental and major spillage of oil, on the environment and other natural resources, cannot be projected until reliable data becomes available which can permit an analysis of the net result of the combined effects. The additional stress which the ecosystem can absorb is limited, but at present, the bounds of these limitations are not known. However, a primary concern is the effect of the breakdown of oil in the marine environment. Among the fractions from the petroleum breakdown are aromatic compounds some of which (toluene and benzene) are very toxic on contact. Other aromatic compounds, including those with carcinogenic properties, are dangerous if ingested, and there is concern that they might be concentrated and transferred through the marine food

chain to man. 1/ The regulations under which further development would occur are the most stringent ever promulgated. With strict enforcement of these regulations and their possible further improvement, the possibility of adverse effects from the proposed action would be minimized.

VI. Irreversible or Irretrievable Commitment of Resources

With further development of oil bearing OCS lands offshore eastern Louisiana, the major irreversible or irretrievable commitment of resources would be the mineral production itself. Some irretrievable loss of marsh or estuary will be incurred in the laying of pipelines. The loss could be minimized by advance planning and utilization of corridors through the estuarine areas.

The major significance of oil pollution in the marine environment is its potential effect on the delicately balanced relationships among living things and between living things and their environment. "Marine life is interconnected in a web of interrelated food chains all of which depend in the end on the chemical situation in the marine environment. Diversity of species is an essential characteristic of these food webs, for diversity is associated with stability in ecological systems." 2/ At this time, there is no evidence that low level pollution has led to an irreversible commitment of resources, nor is there any conclusive evidence that it has not.

1/ M. Blumer, "Oil Pollution of the Sea", op. cit., pp. 6-12.

2/ Schachter, O. and Serwer, D., "Marine Pollution Problems and Remedies," The American Journal of International Law, Vol. 65, 1971, pp. 84-111.

I. Problems and Objections Raised at the Public Hearing on the Proposed Sale (Testimony and Evidence are Filed and Available for Inspection in the Office of the Bureau of Land Management, Wash., D. C.)

1. New Orleans Audubon Society

Dr. Donald G. Schueler testified that the conclusions reached in the environmental statement, particularly on pp. 50 and 51 gives a "green light" to hold the sale while the substance of the environmental statement seems to cry out for the opposite conclusion. He sees a contradiction in the evidence and overall message of the statement and the conclusions reached.

He feels since, as the E.Q. statement says, the long-term effects and consequences of oil pollution are not known precisely, and since the E.Q. statement shows 30,000 bbls of oil per year is spilled into the Gulf and the impact of pipeline installations on marsh lands is destructive - that this should lead to a conclusion which would delay the sale.

Recommends:

1. Require that all pipelines be buried in the marshes rather than to allow canals to be dug.
2. Better means of cleaning up oil spills must be devised before sales are held.
3. Better studies of the effects of oil pollution must be completed prior to giving sales the green light.
4. Selling those tracts classified 1 and 3, but on condition that industry guarantee to bury their pipelines in marsh lands; to agree to bury all

other pipelines they own within a period of 5 years; and, to fire the man in charge of any oil rig who is caught in more than one willful or negligent violation of the laws controlling oil pollution.

5. Sell those tracts in #5 category only when after two years of govt. surveillance and unannounced inspections, it is proved that oil spills have decreased in both volume and number by 60% from those occurring in the first half of 1971.

6 Tracts classified #7 should never be sold.

7. Until all of the above conditions are agreed to, the sale should be delayed.

2. Houston Sportsman's Club

The Sportsman's Club spokesman recommended that exploration and extraction be allowed in areas beyond the six fathom (36 ft.) mark and that all permits be denied in waters that are six fathoms or less.

He also recommended that stricter rules of operation be set up by the Department of the Interior that will protect our Gulf beaches and all the marine life in the Gulf and its appendages.

The spokesman stated that the guidelines for the six fathom depth were studies by the Corps of Engineers on wave harmonics and underwater waves and the Club's own deduction of what the results would be in interpretation of the studies. He indicated that water depth limit, as opposed to other limiting criteria, is used because, generally, in the Gulf of Mexico,

at that depth you're out about seven or eight miles from shore, and that this gives plenty of free room for the oil industry to come in and clean up any spills that may occur.

This relationship between water depth and distance from shore, as expressed, is not constant, however, throughout the Gulf of Mexico. Near the Mississippi delta, the six fathom isobath occurs within one mile from shore in some areas.

3. Sierra Club (National)

Concern was expressed over the land use required by power plants and transmission lines and it was estimated that transmission lines alone could, in twenty years, require land space equal to twice the size of Delaware.

Comments on the inadequacy of the alternative section of the draft statement and the lack of any discussion on present levels of Federal funding for research and development on alternative clean energy sources were raised.

Recommends cancellation of the lease sale on the basis that present and projected energy requirements are overestimated and that significant hazards to a major estuarine, coastal, and marine environment would be increased by the proposed sale. Further recommendations, if the sale is not cancelled are:

1. Tracks outlined as carrying a high environmental risk should be withdrawn.

2. Pipeline laying, if it occurs, should be done by methods not requiring concomitant canals.

3. Pipelines should be back filled, and measures taken to reverse damages which are presently occurring because of pipelines in access canals.

4. Stringent safeguards outlined in the draft statement should be strictly enforced and updated as techniques improve.

4. Perdido River Basin (Alabama) Anti-Pollution Association

Requests that approval of the entire lease sale be denied and that until it can be proved that oil production can be accomplished without endangering the environment, an indefinite drilling moratorium be placed on all oil leases in existence at this time, on the submerged lands and coastal waters, and in the Gulf of Mexico.

5. Council on Environmental Issues, Louisiana State University

Mr. Will Pozzi commented that he was principally concerned about the effect of a possible oil spill on the marsh grasses (Spartina sp.) which form the basic foundation for the marsh/estuarine food chain. He stated that an oil contamination study on a similar species of marsh grass showed damaging effects from small continuous applications and single large applications of oil.

A further comment expressed concern over the effects of dredging and erosion on the marsh grasses and the migratory patterns of oyster larvae and shrimp.

Mr. Pozzi recommended that on the basis of data he presented, which reveals the lack of known data on alterations presently occurring, leasings be postponed indefinitely until an adequate environmental impact study has been undertaken to consider these areas. He expressed particular concern in regard to the following tracts:

South Pass - 32, 33, 34-35, 46, 47, 48, 49, 51, 52, 53

6. Sierra Club (Baton Rouge)

Dr. John W. Day testified that all of Louisiana's major commercially sought fishery species, spend all or portions of their life cycle in estuaries and salt marshes and that a reduction in salt marsh acreage, which is presently occurring according to data he presented, will result in decreased productivity of the estuarine areas.

He stated that there has been an increase in the total amount of fisheries in the past several years, but that the catch per unit of effort has been decreasing.

He offered several methods for conserving energy and suggests that in light of these facts, all of the blocks in the proposed sale are not needed and that some be saved for later development.

He opposed leasing of those blocks which pose a high risk to estuarine and marsh areas and commercial fisheries, and the leasing of tracts which would necessitate the building of new pipelines across marshlands.

7. Offshore Operators Committee

The Offshore Operators Committee (OOC) is an organization composed of 50 operators who have 95 percent of the production now being obtained from the offshore waters of Louisiana and Texas. Portions of the OOC testimony are included here because they specifically address some of the information presented in the draft statement and because expert witnesses produced by OOC rendered testimony in regard to many of the environmental issues involved in the proposed sale.

OOC comments take exception to several points presented in the draft environmental statement which will be discussed on an item by item basis.

(1) OOC states that, "As set forth in the testimony of Dr. Mackin, it can be safely asserted that the environmental risk from oil on the water, the shore and in the marshes has been highly overrated."

(1a) The word "overrated" is non-quantitative. The statement forms an opinion which is supported by some, but not all of the scientists who testified.

(2) The second point raised is that "distance from the shoreline should not be the sole criterion of assuming the risk factor. That prevailing winds, deep currents, surface currents and tidal movement are all factors to be considered, and these introduce such variables into a particular situation at a particular location on a particular

day or hour that the assignment of a risk factor from an OCS tract to a particular site can only be arbitrary. Actually, the preponderant combination of these variables is such that the normal movement of an oil spill on the surface of the water is parallel to, or away from the shore." 1/

1/ K. L. Drennan, 1963; D. F. Leipper, 1954; G. B. Austin, 1955, and U. S. Naval Oceanographic Office, Tides and Currents, 1965.

(2a) The statement that the distance from the shoreline is the sale criterion in the risk ranking index is incomplete. The ranking index also assumes a transporting medium (water) and other factors (wind and currents) which do influence the transporting medium, otherwise the ranking index would be unnecessary. The inshore portion of the sale area is of most concern because of the extreme variability of currents and winds there, and because, as Dr. Mackin points out in his testimony "concentrations of oil from spills are greater." Another witness, Dr. Straughn, in reference to the significance of tracts in deeper water, indicated that "one could generally expect less effect from an accidental oil spill in these depths and distances from shore than from a spill in shallow inshore waters."

The ranking index is "arbitrary," as are several safety regulations we live with, such as highway speed limits. Ranking methodologies are standard and accepted tools with which decision-makers array data in an attempt to rationally deal with complex problems.

Until such time as a better method is presented, it offers a starting point.

The report by P. C. Scruton, which is discussed in the final statement is a more comprehensive description of the inshore water circulation than the references listed above and does not indicate that water movement toward the shore occurs only under abnormal conditions. Hence the premise cited in the draft statement "under normal wind and water current conditions", the oil can actually reach the shore, appears to be correct according to Scruton's study, which indicates extreme variability in the area, despite resultant trends.

The statement in section (4) of the OOC comments which indicates that action plans, including containment and protection of birds, are possible within a "very few hours", is interesting when taken alongside testimony given by Mr. C. L. Blackburn, Shell Oil Company. Mr. Blackburn speculated that "in the event of a spill, given reasonable weather, we could have the equipment mobilized within twenty-four hours." Whether or not 24 hours is a "very few hours", this statement lends credence to the time lag assumption concerning containment and recovery equipment. There is obviously some time lag.

The OOC questions the accuracy of a sentence in the draft statement (page 9) concerning marshland destruction. The draft statement wording was unintentionally misleading and the 40 percent figure for marshland destruction is apparently in error. Accordingly, the final statement has been revised. However, the next witness for OOC, Mr. William L. Manning of Louisiana Land and Exploration did not discuss an important aspect of man-caused land loss in his analysis. Mr. Manning estimated that about 6% of the total loss (16.5 square miles) is attributable to pipeline construction. This does not take into account the land loss due to rig-cuts or access channels for barge-mounted rigs. According to S. M. Gagliano, Coastal Studies Institute, L.S.U., (personal communication) rig-cuts account for more land loss than pipeline installation.

The first witness for OOC, Mr. R. W. Bybee, Humble Oil and Refining Company, discussed, among other things, some of the geologic conditions as they affect safety and protection from environmental pollution. He stated that surface and sub-surface faults, abnormal pressures and mud slides and unstable bottom sediments are potential problems in the area, but due to current technologies these conditions no longer present the hazard to safety or to the environment that they have in the past.

A question unansweted in the draft statement, concerned the ultimate destination and use of the Louisiana low-sulphur oil. Mr. Bybee guessed that a very substantial amount of it would be used in the U. S. and he knew of no plans to export any large amounts of it, now or in the future.

In response to a question on the sulphur content of Louisiana crude, Mr. Bybee later provided an analysis showing the sulphur content of Louisiana crude to be 0.34% by weight, compared to a sulphur content of 0.74% by weight for a sample of Santa Barbara crude oil.

A second witness, Mr. J. W. Pittman of the Shell Oil Company offered testimony on several points, including multiple-use of the offshore area. He stated that underwater stubs had been a source of irritation between the oil industry and the shrimpers and that 123 such stubs had been removed in the past year with another 30 scheduled for removal within the next 60 days.

Commenting on the OOC testimony, Mr. Waldo Orrson of the Louisiana Shrimpers Association provided different figures (personal communication) indicating that as of August 31, 1970, there were 185 stubs requiring removal and by August 31, 1971, 117 stubs remained.

Another witness representing OOC, Dr. John G. Mackin, testified extensively on present and past environmental conditions in the northern Gulf of Mexico, with particular references to any known effects of oil pollution. Based on his personal knowledge of the area, and several scientific studies he has conducted, Dr. Mackin offered an opinion that, "since oil spills in shallow, confined waters cannot materially affect marine communities, one has little to fear from spills in offshore waters."

Dr. Mackin's full testimony and answers to questions from panel members is on file, along with specific comments from Dr. Max Blumer, on certain points or issues raised at the hearing.

The final OOC witness, Dr. Isdale M. Straughn, largely confined her remarks to a study she conducted following the Santa Barbara Channel oil spill in 1969. Dr. Straughn stated that the report of the study, and reports of other independent studies, found that the biological damage was much less than predicted immediately after the spill and the area is recovering.

Dr. Straughn's testimony and answers to questions from panel members is on file, along with copies of the two volume report on the Santa Barbara oil spill.

8. Atlantic Richfield Company

Dr. Jack C. Parker, appearing on behalf of Atlantic Richfield, testified that he had been associated with Atlantic Richfield in a cooperative mariculture project for the past two years, and to his knowledge oil operations off the Texas and Louisiana coasts pose no threat to the Gulf ecosystem.

Dr. Parker stated that he considers the oil platforms an ideal base from which to conduct marine biological research in high quality sea water.

Dr. Parker's full testimony and supplemental evidence is on file in the offices of the Bureau of Land Management, Department of the Interior, Washington, D. C.

In summary, 107 witnesses testified at the Public Hearing, of whom the vast majority, including those commercial and sport fishermen present, testified in favor of the proposed lease sale. Comments of several witnesses who testified in opposition to the proposed lease sale are discussed in this section of the final environmental statement.

Attachment A

PROPOSED GENERAL SALE

Area	Approx. Water Depth (Feet)	Approx. Distance from Shore (Statute Miles)	Acreage	Primary Pro. Anticipated
Ship Shoal				
Block 98	15	11.5	5,000	oil & gas
110	24	12.6	5,000	oil & gas
160	42	23	5,000	oil & gas
202	102	36.8	5,000	oil & gas
320	330	64	5,000	oil & gas
326	342	61	5,000	oil
338	348	63	5,000	oil
343	360	66	5,000	oil
344	360	69	5,000	oil
345	360	68	5,000	oil
359	390	68	5,000	oil
S. Timbalier				
Block 195	114	36	5,000	oil & gas
202	138	40	3,772.18	oil & gas
217	144	43	5,000	oil & gas
314	372	63	5,000	oil & gas
315	378	63	4,457.74	oil & gas
316	420	65	4,434.96	oil & gas
Grand Isle				
Block 58	120	19	5,000	oil & gas
65	132	21	5,000	oil
67	150	24	5,000	oil
69	156	24	5,000	oil & gas
76	144	24	5,000	oil & gas
84	150	26	5,000	oil & gas
94	198	36	4,539.89	gas
95	210	39	4,539.89	gas
West Delta				
Block 35 & 36($E\frac{1}{2}$)	66	9	1,804**	oil & gas
36($W\frac{1}{2}$)	66	10.5	1,446***	oil & gas
68 (North Half)	102	15	1,832.50	oil & gas
101	204	17	5,000	oil & gas
113	264	11	5,000	oil & gas
124	288	13	5,000	oil & gas
143	354	16	5,000	oil & gas
149	360	20	5,000	oil & gas
154	390	22	5,000	oil & gas

Area	Approx. Water Depth (Feet)	Approx. Distance from Shore (Statute Miles)	Acreage	Primary Pro. Anticipated
South Pass				
Block 32	197	3.5	1,100*	oil & gas
33	288	3.5	4,400*	oil & gas
34 & 35	150	3.5	1,500*	oil
46	210	5	2,500*	oil
47	264	4.5	4,700*	oil
48	300	4.5	4,999.96	oil
49	420	6	4,999.96	oil
51	480	7.5	4,999.96	oil
52	450	7	4,999.96	oil
53	360	7	4,999.96	oil
56 & 57	180	3.5	2,800*	oil
73	360	6	5,000	oil
75	300	8	5,000	oil
76	270	6	5,000	oil
77	270	4.5	4,900*	oil
78	222	4.5	2,500*	oil
82	390	10	5,000	oil
83	432	12	5,000	oil
96	510	19	5;000	oil
Main Pass				
Block 60	78	10	4,000*	oil
61	108	8	3,500*	oil
73	150	7	3,500*	oil
138	132	14	4,994.55	oil
139	120	12	4,994.55	oil
140	150	10	4,994.55	oil
141	174	12.6	4,994.55	oil
146	192	10	4,560.81	oil
147	192	9	4,560.81	oil
148	180	7	5,000	oil
149	216	10	4,999.96	oil
150	240	10	4,999.96	oil
151	216	3.5	5,000*	gas
219	192	53	4,994.55	gas
220	210	53	4,994.55	gas
221	252	56	4,994.55	gas
222	264	56	4,994.55	gas
223	264	55	4,994.55	gas
245	204	48	4,994.55	gas
246	240	49	4,994.55	gas
247	270	52	4,994.55	gas
261	276	52	4,994.55	gas
262	270	49	4,994.55	gas
263	246	47	4,994.55	gas

Area	Approx. Water Depth (Feet)	Approx. Distance from Shore (Statute Miles)	Acreage	Primary Pro. Anticipated
280	300	51	4,994.55	oil & gas
281	330	51	4,994.55	oil & gas
282	330	53	4,994.55	oil & gas
302	228	15.5	4,999.96	oil & gas
303	228	18	4,999.96	oil
304	240	21	4,999.96	oil
309	270	21	4,999.96	oil
310	252	18	4,999.96	oil
311	246	15	4,999.96	oil

* - Approximate Acreage Seaward of Decree Line
** - Approximate Acreage in Zone 2
*** - Approximate Acreage in Zone 3

Attachment B

Strategy for Safe Development of Oil and Gas Resources of the OCS

Management of the mineral resources of the OCS will be conducted in such a manner as to cause these resources to make their optimum contribution toward supporting the present and future National economy at a rate consistent with adequate protection of the environment, orderly and timely development of the resource, and receipt of a fair market value return to the Federal Government. Leases are issued and administered to effectively develop known reservoirs and to discover and develop new ones.

Reasonably safe development of oil and gas resources on the OCS can be achieved through strict enforcement of lease stipulations and obligations detailed in the OCS operating regulations and orders based on sound operating practices backed by effective contingency actions in the event that pollution occurs as a result of a natural disaster, human error, or equipment failure.

Research and development programs in exploration, production, transportation, containment and clean-up technology which will provide greater safeguards for the environment, is underway by the Interior Department, other Federal agencies and private industry. As advances are made, OCS operating regulations and orders will be revised and the new technology applied to existing leases as well as new leases. Revisions of the

regulations and formulation of lease stipulations may also result from the review of environmental impact statements by the agencies and the interested public.

Regulations

Regulations governing OCS oil and gas lease operations in the Gulf of Mexico are contained in Title 30, Code of Federal Regulations and OCS Order Nos. 1-7, dated August 28, 1969, Nos. 8-9 dated October 30, 1970, and No. 11, dated December 11, 1970. Leasing regulations are contained in Title 43, Code of Federal Regulations. The regulations establish procedures and requirements to be followed in all stages of lease operations: exploratory and development drilling, production, transportation (pipeline construction and operation) and abandonment. Compliance with and enforcement of existing regulations will permit exploration, development and production operations to be conducted on the OCS within a low order of environmental risk; however, research into techniques to improve OCS operating efforts needs to be continued and strengthened. Management systems require further refinement, redefinition and effective implementation.

A general description of operating requirements under the existing regulations follows:

Plans: Operating plans must be submitted to and approved by the Geological Survey (GS) before each stage of operations is initiated (exploration, development, abandonment). Approval of all operations must be obtained prior to their commencement.

Operator inspection and testing: The operator is required to inspect all aspects of the safety systems at specified intervals, e.g., daily pollution inspection on manned facilities, "frequent" inspection on unmanned facilities, monthly test of check valves, etc. Detailed records of inspections and tests are required.

Reports: The operator is required to report all spills or leakage of oil to GS without delay. He is also required to notify GS of any unusual condition, problem, or malfunction within 24 hours.

Safety devices: Required safety devices include: Subsurface safety devices, high-low pressure shut-in controls, high-low liquid level shut-in controls, pressure relief valves, automatic fail-close valves at the well head, automatic fire fighting systems, automatic gas detector and alarm systems, and other safety devices on production equipment; high-low pressure sensing devices and automatic shut-in valves on pipelines; and blowout preventers, related well control equipment, and mud system monitoring equipment on drilling wells.

Waste Disposal: The lessee is prohibited from disposing into the ocean any oil (except that oil in produced waste water is permitted up to 50 ppm), untreated waste material or other materials which may be harmful to aquatic life or wildlife. Any drilling mud which may contain toxic substances must be neutralized before it can be disposed of in the ocean, and drill cuttings and sand must be processed, and oil removed, before they can be disposed of in the ocean.

Site clearance: When an installation is no longer needed for development of the lease, the well is plugged with cement and all casings and piling must be severed and removed to at least 15 feet below the ocean floor and the location must be dragged to clear the site of any obstruction.

Contingency plans and equipment: The operator is required to have an approved plan for controlling and removing pollution which provides for:

a. Standby pollution control equipment, including containment booms, skimming apparatus, and approved chemical dispersants, immediately available to the operator at a land base location.

b. Regular inspection and maintenance of such equipment.

Special Stipulations

Leases for oil and gas exploration and devlopment are subject to all OCS operating regulations and orders. Additionally, in some cases the lease may include special stipulations which are considered necessary for the protection of other resources. These are usually designed to meet the needs of particular resources, e.g., wildlife or waterfowl refuges, fishing areas, or certain recreation areas, etc., which might be threatened by development of tracts included in the lease.

Departures

A departure (waiver) from OCS orders or other rules of the GS Supervisor may be granted when such a departure is determined to be necessary for:

a) the proper control of a well,

b) conservation of natural resources,

c) protection of aquatic life,

d) protection of human health and safety,

e) protection of property, or

f) protection of the environment.

In the case of subsurface safety devices, a waiver may be granted only when the following technical conditions exist:

a) When artificial lift is required.

b) When the flowing tubing pressure at the wellhead is 100 psig or less.

c) When the subsurface device causes sand to plug the tubing or sand makes the subsurface safety device inoperative.

d) When well flow rate fluctuation or water production prevents a well equipped with a subsurface safety device from producing.

e) When the mechanical condition of the well does not permit the installation of a subsurface safety device or when such a device cannot be installed at the prescribed minimum depth of 1,000 feet or more below the ocean floor.

These waivers are technically based decisions and are granted in situations only where expert judgment determines that better, safer operations would result than if no waiver were granted.

Operating Practices

Safe operations on the OCS require operators to conduct their activities in a prudent manner working toward standards which sound professional judgment dictates even if such standards exceed, or are not required by, the regulations and operating orders.

Inspection

Compliance with the regulations and lease requirements is assured through adequate surveillance of the operations under the lease and enforcement of specific requirements. The inspection system of the Geological Survey includes: (1) review and approval of plans before each operating stage is initiated, (2) close review and follow-up is necessary, by GS inspectors of all reports required of the operator by the regulations (3) on-site inspection and (4) aerial monitoring through the use of helicopters (operators are also required to inform each other of oil spills or other irregularities which they observe).

Operator reports: A comprehensive reporting system covering all oil spills and any unusual conditions (For example: reporting and investigation of a persistent oil slick from an unknown source such as a sunken ship or natural oil seep) is required by the regulations and is a key factor in monitoring operations. Operators are also required to maintain records for GS inspection of required periodic tests of safety equipment. Compliance with reporting requirements can be assured only by periodic on-the-site inspection and aerial monitoring.

On-site inspection: Although operations are normally inspected at least every 6 months by the GS, leases in certain areas or in a particular development stage may require more inspections to assure the achievement of safety objectives. GS is currently conducting studies to determine the optimum frequency of inspection for the various types of operations. Inspection schedules will be adjusted as a result of the findings of these studies.

A program of intensive inspections is used on OCS leases; for example, periodically all available inspectors may devote a week to inspecting production platforms and drilling wells selected on a random basis; inspections during other periods are conducted on a regular basis with emphasis on operations believed to require special attention. The number of GS field personnel (inspectors) has increased from 9 technicians and 5 engineers as of January 1, 1970, to 23 technicians and 9 engineers as of September 1, 1971. During the period January 1 to September 1, 1971, these technicians spent 2,174 inspection days or 22,326 man-hours, and engineers 243 inspection days or 2,513 man-hours in the field. Detailed inspections were conducted on 670 producing platforms in the Gulf of Mexico. Approximately fifty percent of these inspections were unannounced. Included in these inspections were 6,317 well completions. Also, during this period, 371 drilling rigs were inspected. As of September 1, 1971, there were 8,677 completions capable of producing oil and gas on OCS lands offshore Louisiana. Approximately 80 drilling rigs are operating in Gulf OCS waters at this time.

Aerial Monitoring

"Fly-overs" of OCS operating areas are programmed on a seven day per week basis by GS inspectors. Any indication of oil pollution or other noncompliance will be followed immediately by an on-site inspection. During the period January 1 to September 1, 1971, 874 pollution surveillance flights were made. The six helicopters chartered by the Geological Survey for use of the inspecting personnel flew a total of 3,496 hours.

Enforcement

The enforcement policy is intended to: (1) reduce the incidents of noncompliance of lease requirements which may lead to loss of life, property, and damage to the environment; and (2) maintain a uniform enforcement policy to be applied to all operations affecting OCS lands in the Gulf of Mexico. When, in the course of an inspection, a requirement pertaining to the prevention of oil pollution or any other safety hazard is found to be in noncompliance, the operation will be shut-in until it is brought into compliance. After a shut-in, the operation can only be resumed by authorization of the GS; in all cases this requires reinspection (or a waiver of the inspection requirement). Minor incidents of noncompliance may require only a warning that corrections be made within a week (the operation will be shut-in if the required corrections are not made).

Additional penalities for noncompliance are specified in P.L. 83-212, Outer Continental Shelf Lands Act, Sec. 5(a)(2). "Any person who knowingly and willfully violates any rule or regulation prescribed by the

Secretary for the prevention of waste, the conservation of the natural resources, or the protection of correlative rights shall be deemed guilty of a misdemeanor and punishable by a fine of not more than $2,000 or by imprisonment, and each day of violation shall be deemed to be a separate offense." Also, Sec. 5(b)(1) and (2) provides for cancellation of nonproducing and producing leases by notice subject to judicial review or appropriate judicial proceedings.

Contingency Action

Oil spills will occasionally occur as a result of natural disasters, equipment failure or human error. In the event that such an emergency occurs, the following action will be taken:

1. In the case of any spill, the operator is required to initiate action to control and remove the oil production in accordance with his approved emergency plan.
2. If the operator should be unable to control and remove the pollution, the Regional or National Contingency Plan may be activated and the designated Federal on-scene commander would take over control and clean-up operations at the operator's expense. (This action has never been necessary on any OCS operation to date).

A spill or leakage of less than 15 bbls requires a report from the operator as to the nature of the spill or leakage, why it occured and what steps were taken to correct it. A spill of 15-50 bbls must be

reported by telephone immediately to GS and confirmed in writing. A spill of over 50 bbls, or one of any magnitude that cannot be immediately controlled, must be reported immediately to the Coast Guard and the Environmental Protection Agency as well as to GS.

Research on Advanced Technology

GS is evaluating the advantages and disadvantages of using remote or surface controlled subsurface valves (hydraulically activated storm chokes not dependent on well pressures) on the Gulf of Mexico oil and gas leases. It is also studying different kinds of fire control systems. EPA and Coast Guard are conducting research on containment and recovery devices (booms and skimmers). When the results of these studies, and any other similar studies so indicate, the requirements for use of better techniques and equipment will be incorporated into the OCS regulations and orders as appropriate. If incorporated, the requirements will be applied to all leases.

Geophysical Information

High-resolution seismic surveys over those areas with potential shallow geologic hazards, such as faults or high pressures, are programmed for FY 1972. This program will provide a level of competence in supporting supervisory decisions that will be technically sound and provide maximum safety control in the orderly development of the OCS. It is expected that high-resolution seismic data will be available for these proposed tracts prior to development.

Environmental Management

The Bureau of Land Management has under consideration an expanded program for the management and protection of the resources of the OCS. The program would include establishment of environmental impact analysis teams. These teams would be comprized of specialists with a wide variety of technical discipline who will evaluate the effectiveness and safety of current uses of the resources of the OCS. They would study short-term and possible long-term impacts on the OCS and related environments from current operating practices and from emerging new technology. The operations of the environmental analysis teams would be supported by research projects as knowledge gaps become evident. OCS lease requirements would be revised and strengthened on the basis of these investigations to assure safer and more effective use of the resources of the OCS.

Other Requirements

In addition to the Interior Department requirements, the operators must comply with applicable navigation and inspection laws and regulations administered by the U. S. Coast Guard. These relate to safety of personnel and display of prescribed navigational lights and signals for the safety of navigation. Permits to install islands and fixed structures and the drilling of wells from mobile drilling vessels must also be obtained from the U. S. Army Corps of Engineers, which is authorized by the Outer Continental Shelf Lands Act to prevent obstructions to navigation. Pipeline construction must be in compliance with standards established by the Office of Pipeline Safety, Department of Transportation. The Department of Labor establishes Occupational Safety and Health Standards which are applicable to OCS operations.

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY

OCT 07 1971

Mr. Burton Silcock
Director
Bureau of Land Management
Department of the Interior
Washington, D. C. 20240

Dear Mr. Silcock:

The draft environmental impact statement for the proposed Outer Continental Shelf gas and oil lease sale offshore Louisiana has been reviewed within the Department of Transportation.

In general, we found the draft statement to be lacking in significant detailed information about the proposal, particularly in light of the potential for major impacts upon shore, marine and tidal marsh environments, and navigation and fishing in the areas proposed for development. The statement also appears to be based upon an assumption that adjustments could be made in other uses of the area, particularly navigation and shipping lanes, to conform with the proposed lease sale, and with development of gas and oil resources on the Outer Continental Shelf.

In their review of the draft statement, the U. S. Coast Guard raised two major issues:

1. "Those tracts laying directly east of the Delta Migratory Waterfowl Refuge pose a particularly hazardous threat to that refuge area. There appear to be no natural buffers or barriers that would prevent spilled oil from entering the refuge should a spill occur with winds out of the east. Experience has shown that waterfowl are especially susceptible to the damaging effects of an oil spill, the possibility of which, it cannot be denied, exists."

2. "Subject statement seems to make light of the fact that installations, devices, or structures, whether fixed, permanent, semi-permanent, or mobile are, when in a fairway, a hazard to navigation. It also seems to consider it a simple and logical solution to relocate the fairways and sea-lanes to satisfy the desires of the oil industry. It has been the Coast Guard's position to resist any encroachment by the oil

industry on designated fairways. This was the subject of a mutual agreement between Department of Transportation and Department of the Interior. Recent events, such as the increase in size and speed of ships, the IMCO resolution to enforce proper use of sea-lanes, etc., make it all the more important to insure the inviolability of the fairways."

In light of these problems, which are of direct concern to the programs of this department, and the possibility for pollution from oil spills which may occur, we recommend that the following actions be taken:

1. The environmental impact statement should be revised to reflect:

   a. the needs of other activities, particularly fishing and shipping, as they relate to the use of the tracts proposed for this sale, and the location of platforms and other structures.

   b. the factors which entered into the recent decision by the Secretary of the Interior to withhold the further sale of oil and gas leases in the Santa Barbara Channel insofar as these factors may be common with the offshore Louisiana area or may apply to offshore drilling operations in general.

   c. proposed measures to be taken in planning, location and construction of pipelines in order to minimize possible interference with shipping activities and the impact on tidal marsh areas. This should also include discussion of the regulations applicable in this area.

2. It is our recommendation that the proposed sale be modified as follows:

   a. all tracts which are located totally within a fairway should be withdrawn from sale.

   b. For all tracts which are located partially within a fairway, placement of structures should not be permitted in the fairway unless necessitated by unusual technical circumstances. In such circumstances, consultation with the cognizant Coast Guard District Commander would be appropriate.

c. any tract in close proximity to a wildlife refuge, or otherwise having a risk level of "7", as evaluated in the draft statement, should be withdrawn from sale.

The environmental impact statement should be further revised to reflect any of the above actions as proposed.

Further, we recommend that the standard for allowable levels of oil in waste water discharge be reevaluated, to reduce the level of oil discharge. The terms under which leases are written should be modified to reflect reductions in the permissible level of oil-waste water discharge.

We appreciate the opportunity to review and comment on the draft environmental impact statement for the proposed lease sale. Staff of this Department will continue to cooperate with personnel of Interior and the industry to insure adequate development of our natural resources while minimizing the environmental harm which inevitably occurs in any major technological endeavor such as the one proposed.

Sincerely,

Herbert F. DeSimone
Assistant Secretary for
Environment and Urban Systems

THE ASSISTANT SECRETARY OF COMMERCE
Washington, D.C. 20230

RECEIVED

SEP 20 1971

OFFICE OF THE SECRETARY
BUREAU OF LAND MANAGEMENT

September 17, 1971

Honorable Jack O. Horton
Deputy Under Secretary
Department of the Interior
Washington, D.C. 20240

Dear Mr. Horton:

Please refer to the draft environmental impact statement, "Proposed Outer Continental Shelf Oil and Gas General Lease Sale Offshore Eastern Louisiana," which was prepared by the Bureau of Land Management and forwarded to the Department of Commerce for review with a letter from Mr. Silcock.

The enclosed comments were prepared by the National Oceanic and Atmospheric Administration of the Department of Commerce. In addition, I wish to relay the following remarks made by NOAA's Director, Office of Ecology and Environmental Conservation:

> "The impact statement appears rather superficially prepared and does not consider the potential impact on living resources which may be exploitable in the future. There is a definite trend towards moving into deeper waters by the fishermen, hence I have some concern for the impact statement's dismissal of this point from their consideration. In any case, while more than 70% of the shrimp are caught in waters less than 60 feet deep (according to the impact statement), nearly 30% remain to be caught in deeper waters."

Both sets of comments are presented for your consideration in preparing the final environmental impact statement.

Sincerely,

Sidney R. Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure

National Marine Fisheries Service comments on Environmental Impact Statement titled "Proposed OCS Oil And Gas General Lease Sale Offshore Eastern Louisiana"

Page 27, Paragraph 3; The statement indicates that the majority of tracts proposed in this sale are located in water depths greater than 110 feet while 90 percent of the commercial fishing activities are carried out in water depths of 90 feet or less. Recent commercial fishing activities indicate a trend toward deeper water harvest which may present greater conflicts than anticipated.

Page 34, Paragraph 3; Favorable Impacts: Subsection 1 indicates a favorable economic impact rather than environmental.

Page 36-37; Unfavorable Impacts: Subsection 2 also fails to provide for the trend of commercial fishing into deeper water.

Page 39-43; Analysis of Environmental Risks: This section proposes a ranking system or risk order based on the proximity of future production sites to high value/critically vulnerable areas. Assumptions were made as to the probability of creating an oil spill, normal hydrological and meteorological conditions, and response time for oil containment and recovery equipment. The ranking index assigns a number (7 to 1) value based on the proximity to high value areas. Since the variables, such as wind velocities, response time etc, are cumulative, the risk level should be weighted by these factors. Ranking could take into account various wind velocities rather than assuming normal conditions.

II. Block Ranking System for Probability of Impact:

The block ranking system simplifies review by providing a graphical presentation of the risks involved. It further offers, as you suggest, an excellent means in which to interrelate information supplied in the statement. The system can thus be expanded to include not only distance but rankings such as the varying sensitivities of the different resource areas affected. For example, wildlife refuges and spawning and nursery grounds are usually more sensitive to spills than beach recreation areas. It would be helpful if the system were so expanded, so that a more comprehensive risk factor could be assigned to each block in the proposed offering. To overcome the difficulty of assigning units of measurement to not easily quantifiable aspects of the environment, such as the sensitivity of a refuge area, you might form very general classifications, as you did in the EIS in the translation of distance into risk factors.

ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF THE
ADMINISTRATOR

SEP 30 1971

Mr. Burton Silcock
Director
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Silcock:

Enclosed are EPA's comments on the draft environmental impact statement for the Proposed Outer Continental Shelf Oil and Gas Lease Sale Offshore Eastern Louisiana. Please excuse the delay in transmitting the comments to you.

We appreciated the opportunity to review and comment on the draft statement. We would appreciate receiving a copy of the final environmental statement when it is available. If we can be of any further assistance, please contact us.

Sincerely,

George Marienthal

George Marienthal
Acting Director
Office of Federal Activities

ENVIRONMENTAL PROTECTION AGENCY

PROPOSED OUTER CONTINENTAL SHELF OIL AND GAS
LEASE SALE OFFSHORE EASTERN LOUISIANA

COMMENTS ON
DRAFT ENVIRONMENTAL IMPACT STATEMENT

The draft statement demonstrates a consideration of the inter-relationships between separate environmentally influencing factors. The statement also well documents its facts and figures. The following comments suggest additions to the statement to make it more comprehensive and raise some issues which deserve further attention and amplification in the final environmental statement.

I. Additional Information for a More Thorough Consideration of Environmental Impacts and Alternatives:

Page 6. The first paragraph describes the geological structure which would be included in the lease sale and states in part, "Geophysical data on the 86 tracts proposed for lease indicate few areas where shallow hazards might exist." This statement indicates that there is a probability of shallow hazards and it should be expanded to indicate which specific tracts might be affected and whether or not these are drainage, wildcat or development tracts. Are any of these potentially hazardous tracts being considered for exclusion from the lease sale? If not, an indication should be made of the special conditions or restrictions that will be imposed on the lease to reduce the hazard on these tracts.

Where it is stated that 170,000 acres of the proposed lease sale will be located near or adjacent to the Mississippi River Delta, it might be helpful to supply projected oil and gas production data for this part of the lease area in relation to the total projected production figures for the entire lease area. Not only would this give reviewers an idea of the portion of production in this especially sensitive and crowded area, but it would also allow them to estimate which part of the projected 3 to 5 added barrels of oil pollution per day (p. 33) would be attributed to which area.

Pages 10-11. The last sentence on page 10 states, "Nearshore surface currents are influenced principally by the deep water circulation which is dominated by the Yucatan Current." P.C. Scruton found a correlation coefficient of r = 0.681 for data plots of wind speed and direction versus surface-current speed and direction in the Grande Isle area. (1956 Oceanography of the Mississippi Delta Sedimentary Environment; Bull. AAPG, Vol. V.40 n. 12, p. 2864-2952). In addition to Scruton's study, other studies in the offshore Louisiana area show that surface currents are highly wind dependent. (See for example; Oceanographic and Remote Sensing Survey in the Vicinity of the Shell Spill, Gulf of Mexico, January 1971. Final report prepared for EPA under contract number 6801-0017. Texas Instruments, Inc., Box 5621, Dallas, Texas, March 25, 1971.) It is highly recommended that available oceanographic and meteorological data be inventoried for areas applicable to this lease sale. This data would permit early prediction of future oceanographic and meteorological conditions at any potential spill site.

If there are generally prevailing wind and current patterns in the lease areas, it would be helpful to the reviewers if they were put in map form so that the reviewer might determine if there are certain coastal areas which are more likely to suffer from spills.

Pages 12-13. Can the 0.5 million acres of suitable recreation land located on the Gulf be shown in map form, and those particular recreation areas for the heaviest growth indicated? Also, since there is no discussion in the statement about projected population and industrial growth along the Gulf as a result of increased offshore oil drilling, can it be assumed that the development of different offshore areas will have no bearings on significant population increases in certain areas?

Page 15. Could the locations for refuge areas, other than those at Brenton and Delta, be located in map form?

Page 24. The statement mentions that 40 new pipelines, including 9 terminal pipelines, will be needed; and points out the general areas in which the terminal pipelines will be located. If possible, a map showing probable locations of each of these pipelines should be supplied. Trunk lines should be considered (and specified) as means of lessening adverse environmental impacts.

The statement indicated that 75 to 125 additional structures may be needed to develop the proposed tracts. How many of these structures are anticipated on deep water tracts?

Based on the map enclosed in the statement, approximately 14 tracts are located in water depths greater than 500 feet. What technology is available to provide assurance that oil operations in deep water are safe? Will the OCS Operating Orders be sufficient to prevent oil spills from oil and gas operations on deep water tracts? Will drilling operations take place on production facilities simultaneously with production? If so, what special provision will USGS include to reduce the potential danger of uncontrolled wells from consolidated (unitized) platforms?

OCS Order No. 9, pertaining to offshore oil and gas pipelines, is less stringent than the Department of Transportation codes applying to oil and gas pipelines. Because of substantial leak detection problems and difficult access for repair in an underwater environment, design requirements should be as least as stringent as the Department of Transportation requirements, and probably more stringent.

Page 28. Concerning the quotation, "Marine life is interconnected ..." etc., could data be presented to show the impact of oil pollution on these interrelationships?

Page 32. The 40 percent recovery figure of spilled oil for the Shell Oil Company fire should be clarified. This recovery rate was estimated and dependent on relatively good weather. Such recovery cannot be correlated to future spills in the Gulf at greater distances from shore.

Page 33. The discussion of waste water discharges makes no mention of the discharge from State controlled lands. To look at OCS discharges alone could give the wrong impression of the oil load the Gulf must carry. This section should be presented to show the combined picture of State and OCS discharges. (This applies to the section on spills as well).

Page 33-34. The difficulties and hazards encountered in drilling and producing in the much deeper waters of the proposed sale may make the incidence of spills rise rather than decline. Also, the statistics used for the past 10 years were related to shallow water operations.

Pages 36, 46, and 47. The statement points out the large amount of marsh land destroyed by pipeline construction each year and the desirability of planning to minimize this destruction. However, neither the statement or the Operating Orders specify how consolidation of lines, connection, and pipeline structures will be achieved to minimize environmental damage. The mechanisms by which this will be done during construction and operation should be specified.

Page 39. The draft EIS states, "As far as can be determined, the few previous spills occurring in the Gulf of Mexico resulted in minimal damage." The combined State and OCS spills, however, have been far from few; and we have no idea at the moment whether long term damage has been minimal or extensive.

Page 44. In discussing the unstable zones or areas for special consideration, mention should be given of the specific block numbers. It is strongly recommended that tracts affected by the unstable zones be postponed or withdrawn from the lease sale until the magnitude of the potential hazard can be clearly defined.

Page 45. This page indicates that 27 blocks in the proposed sale are in conflict with existing regulations governing safety fairway and anchorage areas and that administrative actions required to resolve this conflict are incomplete. It is therefore recommended that the sale of the lease on the blocks in question be postponed or withdrawn until the conflict is resolved.

Attachment B. It would be useful if the final statement included a description of how the Federal agencies associated with this project (See page 133, Geological Survey; page B10, Bureau of Land Management; page B11, U.S. Army Corps of Engineers) have provided for the formal transfer between themselves of information gathered on the project, especially in the cases where one agency uncovers problems with the project.

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314

IN REPLY REFER TO

ENGCW-PV

23 September 1971

RECEIVED
SEP 29 '71
OFFICE OF THE DIRECTOR
BUREAU OF LAND MANAGEMENT

Mr. Burton W. Silcock, Director
Bureau of Land Management
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Silcock:

In response to your recent request, the draft environmental impact statement on a proposed outer continental shelf oil and gas general lease sale in offshore eastern Louisiana has been reviewed. We appreciate the opportunity afforded us to review this statement and offer the following comments for your consideration:

On page 9 and other places the statement cites recent studies by Louisiana State University in which about 40 percent of the annual land loss in the coastal zone is attributed to man-made causes. The data supporting this figure have been found to be in error and are being revised. It is anticipated that the revised information will be available in approximately two months.

With regard to the effects of oil and gas exploitation as described on page 19 and succeeding pages, the usefulness of the classification of fish as resident, semi-catadromous, or seasonal migrant is not apparent. All fish listed spend all or a major part of their life cycle within waters considered in this proposal, and the effects of oil and gas exploitation would appear to be a function more of individual species tolerance than of their distribution in the coastal zone according to season or life history stage. There also appears to be some overlapping within these classifications, particularly between semi-catadromous and seasonal migrants. Some species in both groups tend to move inshore during the summer and offshore during the winter. Should this classification of fish be retained, we suggest that fish described as having become residents because of the construction of offshore platforms have always been residents, and that the effect of the platforms has been to concentrate them.

SWGCO-EV
Mr. Burton H. Silcock

23 September 1971

The first sentence of the new paragraph on page 26 may be misleading as there are regulations that require certain safety devices to compensate for equipment failures.

On pages 27 and 37, it is stated that the proposed lease sale will present only minor conflicts with commercial fishing. We concur in this assessment, but suggest that the statement point out the potential conflict that may arise with new fisheries in the deeper offshore waters. The recently developed and growing fishery for the royal red shrimp is an example of such new fisheries.

The second sentence of the third paragraph on page 29 should be clarified since temperature and light are not necessarily more stressful in deeper regions. Light conditions, in particular, would seem to be more stressful in shallow water because of the frequently occurring high turbidities.

The fifth sentence of paragraph one on page 36 ascribing increased salinities in the estuaries to an increase in the drainage of fresh water may be misleading. Of equal, if not greater importance, is the avenue provided by pipeline canals for the intrusion of saline water from the Gulf of Mexico.

All through the statement, references are made to pipelines. Pipelines require the approval of the Federal Power Commission. As the lead Federal agency in offshore pipeline authorizations, the Federal Power Commission's Environmental Impact Statement has the final say in determining their impact. Any environmental effects attributed to pipelines should be reserved for the individual line's impact statement, and not made a part of this one.

The footnote at the bottom of page 45 implies that Safety Fairways will be relocated if required to facilitate drilling operations. Actually, some of the fairways leading to inland waterways cannot be shifted very much without losing the purpose for which they were promulgated.

The opportunity afforded us to review your draft statement is appreciated, and it is hoped these comments will be of assistance to you in perfecting your final environmental statement for this proposal.

Sincerely yours,

WILLIAM L. [illegible]
Colonel, Corps of Engineers
Executive Director of Civil Works

Action Offic
For info only

FEDERAL POWER COMMISSION

WASHINGTON
20426

OFFICE OF THE CHAIRMAN

SEP 8 1971

Honorable Rogers C. B. Morton
Secretary of the Interior
Washington, D.C. 20240

Dear Mr. Secretary:

The persisting unfavorable trends in United States do natural gas supply have sustained the Federal Power Commis concern for the ability of our developed reserves to conti to meet the increasing demands being placed upon them. He because the problems developing in this area at the presen time appear to be largely those of inadequate resource dev this situation appears somewhat amenable to improvement. ficant natural gas resources remain to be developed in sev regions of the Nation. The task facing those of us charge responsibilities in the energy sector is thus largely one fostering the timely development of this potential so that activities may best serve the public interest. The Feder Commission believes that the public interest can best be if the proposed general lease sale of Outer Continental Sh tracts is held as proposed in December 1971, and the natu gas potential of the area developed in a timely manner in consonance with the need to protect our living environment

The environmental problems associated with additional exploration and development work in the offshore Eastern Louisiana tracts proposed for leasing must receive extraor attention so as to eliminate, insofar as possible, the haz attendant to these operations. It must be recognized, how that the scope of the environmental impact of the offshore activities considered extends far beyond those effects whi may be manifested in the immediate marine and onshore area Major environmental and energy benefits will accrue to the Nation as a whole through the availability of much needed fuel supplies from this area of high resource potential.

urge a consideration of the possible benefits and detriments of the proposed leasing actions in this broad sense.

The data available to us indicates a continuation of the adverse trends in the Nation's natural gas supply/demand balance. The annual Form 15 reports, submitted by interstate pipeline companies regarding natural gas reserves and deliverability, indicate that the declining trend of owned or controlled reserves which began in 1968 has worsened. Preliminary analysis indicates that these reserves suffered a net decline of 13.9 trillion cubic feet in 1970. An additional volume of gas was abandoned from certificated interstate service in 1970 bringing the total loss of reserves dedicated to the interstate market to 17.8 trillion cubic feet. This latest decrease follows net reductions of 3.1 and 7.4 trillion cubic feet in 1968 and 1969 respectively. Assuming a continuation of these current trends in reserve position and increasing market requirements, the Commission's staff predicts a 10 percent deficiency in the ability of interstate pipeline companies to meet requirements as early as 1974.

National reserve data published annually by the American Gas Association includes information on both interstate and intrastate companies and parallels the trends indicated by Form 15 data. While these statistical series differ in some technical respects, this parallelism is easily seen in the comparison of these two series given below. Both data series exclude Alaskan volumes which are not yet available to lower 48 markets. A concurrent reduction in the finding to production ratio, as derived from AGA data, has accompanied the decline in proven reserves. During the period January 1, 1968 to December 31, 1970, AGA production exceeded reserves added by more than 30 trillion cubic feet.

COMPARISON OF AGA AND
FORM 15 DATA
(Volumes in Trillions of Cubic Feet)

	End of Year Reserves		Reserve to Production Ratio	
	AGA	Form 15	AGA	Form 15
1963	274.5	188.5	18.9	20.2
1964	279.4	189.2	18.3	18.9
1965	284.5	192.1	17.5	18.5
1966	286.4	195.1	16.4	17.5
1967	289.3	198.1	15.7	16.8
1968	282.1	195.0	14.6	15.5
1969	269.9	187.6	13.1	14.0
1970	259.6	173.7	11.9	12.3

Further evidence of the worsening domestic natural gas supply position is seen in increasing applications to this Commission to import Canadian and other foreign gas and in other applications to synthesize natural gas substitutes from natural gas liquids or naphtha. Additionally, numerous gas utility companies are being forced to impose sales restrictions on their customers. We set forth our findings as to the current supply situation in Opinion No. 598, Area Rate Proceeding, et al. (Southern Louisiana Area), wherein we said:

> "Curtailments in service to customers by pipeline and distributor companies are before us in a number of proceedings, including United Gas Pipeline Co., Docket No. RP71-29, Northern Natural Gas Co. Docket No. RP71-89, and Natural Gas Pipeline Co. of America, Docket No. RP70-42. We take notice of these actions and other actions of pipelines and distributor companies. A series of orders we issued directed to amelioration of gas supply problems, including specifically Order No. 402, Order No. 402-A, Order No. 418 and Order No. 431 also bear upon this. An adequate gas supply is essential for efficient utilization of pipeline investment in transmission facilities to provide required service at a reasonable cost to the consumer. We thus find a critical shortage of gas in the United States."

A survey released by the Future Requirements Committee on September 1, 1971 indicates that in 1975 only 86 percent of the anticipated national requirement for natural gas can be met from currently contracted and assured supplies. By 1975, only 24.6 trillion cubic feet of supply are expected to be available to meet requirements for 28.5 trillion cubic feet resulting in a shortfall of 3.9 trillion cubic feet. The anticipated deficiency is equivalent to 620 million barrels of residual fuel oil or 149 million tons of coal. This survey provides further evidence of the tightening supply situation.

The Southern Louisiana area (including both onshore and offshore zones) has played a major role in determining the Nation's natural gas reserve-production position in the past, and is expected to take on increasing significance in the future.

In 1956 this area contributed about 13 percent of the gas produced domestically. By 1970, its contribution had increased to about 34 percent. Production during the period from 1956 through 1970 increased fivefold, while reserves doubled. The importance of Louisiana's Federal offshore domain to the area is demonstrated by the fact that during the past three years more than one-half of South Louisiana's reserve additions (or about one-fourth of total U.S. reserve additions) have been found and developed in Federal offshore Louisiana waters. It is estimated that in 1970 about 10.3 percent of total U.S. gas production and about 9.5 percent of total U.S. oil and condensate production were produced from the offshore Federal domain.

The latest estimate of potential natural gas supply by the Potential Gas Committee attributes 145 trillion cubic feet to South Louisiana as a whole, and 99 trillion cubic feet (or more than 68 percent) to the offshore area. The total offshore Louisiana potential comprises almost 12 percent of that estimated for the lower 48 states. These figures illustrate the degree to which the ability of the lower 48 states to meet the growing demand for natural gas depends on the development of Louisiana's offshore potential. The present state of development of offshore transportation facilities, with numerous pipelines already extending out into the Gulf waters, will shorten the time required to bring these resources to maturity.

The development of these needed resources is, of course, responsive to many factors, including the maximum wellhead price set by the Commission for sales into interstate commerce. Factors outside the Commission's jurisdiction include the industry's level of technology as it relates to offshore operation; tax policies; the relative attraction between domestic and foreign investments; and leasing policies relating to Federal domain lands.

While the Federal Power Commission has acted on many fronts with regard to meeting our own regulatory responsibilities to foster and facilitate an improvement in the gas supply situation, the most important action relating to this specific area was the determination of just and reasonable rates for South Louisiana in Opinion 598 issued July 16, 1971. The ceiling prices for offshore gas were set at 21.375 and 26.0 cents per Mcf respectively for gas deliveries made under contracts dated prior to October 1,

1968 and subsequent to that same date. Additional incentives designed to furnish a needed economic stimulus to the increased exploration and development of gas properties in this vital supply area were provided. As we pointed out in our Opinion No. 598:

> "Our minimum objective has to be action to halt and hopefully to reverse the downward trend of the reserves-to-production ratio. It is from the Southern Louisiana area that we reasonably can expect the greater portion of total demand for jurisdictional gas to be satisfied in the next few years."

The current absence of viable fuel supply alternatives which can provide the same economic and environmental advantages provided by natural gas accentuates the necessity for an orderly and controlled expansion of leasing opportunities in the offshore Louisiana area. It will be several years before currently anticipated supplemental gas supplies in the form of imported liquefied natural gas, gas from coal, or gas from Alaska can provide any significant portion of our energy needs. In the interim we must depend on the optimized development of our known resource potential to adequately provide for the energy needs of the Nation.

In considering the possible benefits to be derived from the proposed lease sale, consideration must also be given to the environmental implications of such sale. The National Environmental Policy Act of 1969 stressed the need for encouraging harmony between man and his environment. The pursuit of this objective requires the evaluation of a multitude of environmental factors extending from the local areas where the development and production activities take place to the ultimate markets where the resource is consumed. The availability of clean fuels for heating homes, cooking meals, and supplying energy for the manufacture of products and the generation of electricity certainly contributes to man's environment. Because of its clean burning characteristics, natural gas is a premium fuel in the battle to preserve and protect the quality of the air man breathes. The state of present technology still leaves much of the burden for protecting the atmosphere to the utilization of low-sulfur fuels such as natural gas.

As is stated in the National Environmental Policy Act of 1969, a major purpose is to "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences." A balance between environmental protection and resource development is also recognized in Section 101(b)(5) of the Act which states that "it is the continuing responsibility of the Federal government to use all practicable means...(5) to achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities... ." From our viewpoint, such balance will be aided by the rapid development of the Nation's offshore natural gas resources.

Sincerely,

John N. Nassikas

John N. Nassikas
Chairman

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF THE SECRETARY

WASHINGTON, D.C. 20201

August 17, 1971

Mr. Burton Silcock
Director, Bureau of Land Management
U. S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Silcock:

This is in reply to your letter to Dr. Egeberg on August 9 (?) enclosing a draft environmental impact statement relating to a proposed Outer Continental Shelf oil and gas lease sale of 86 tracts of submerged lands offshore from Louisiana.

Our review of the proposal does not indicate any threat to public health; therefore, the Department defers to the Environmental Protection Agency for comment on their particular interests in this matter.

Sincerely yours,

Raymond T. Moore

Raymond T. Moore, M.D.
Special Assistant, Office of the
Assistant Secretary for Health
and Scientific Affairs

STATE OF FLORIDA

Department of Administration

Bureau of Planning

725 SOUTH BRONOUGH

TALLAHASSEE

32304

(904) 224-3117

Reubin O'D. Askew
GOVERNOR

L. K. Ireland, Jr.
SECRETARY OF ADMINISTRATION

Wallace W. Henderson
DIRECTOR OF
PLANNING AND BUDGETING

. Still, Jr.
PLANNING

September 20, 1971

Mr. John C. Crow, Director
U. S. Department of Interior
Bureau of Land Management
Washington, D. C. 20240

Dear Mr. Crow:

The State Planning and Development Clearinghouse has reviewed the following draft environmental impact statement prepared by the Bureau of Land Management:

Proposed 1971 Outer Continental Shelf Drainage Sale - Offshore Louisiana. SPDC Project No. 72-0022.

During the course of our review, we have referred the environmental impact statement to the following agencies, which we have identified as interested in the environmental effects of the project or in developing or enforcing standards relating to these effects: Attorney General; Department of Pollution Control; Division of Health; Department of Natural Resources; Board of Trustees of the Internal Improvement Trust Fund; Office of the Governor; and the Environmental Information Center.

Agencies were requested to review the statement and comment on the adequacy of treatment of environmental matters of their concern, additional alternatives which should be considered, and project modifications or special control measures to reduce or avoid adverse environmental effects. Agencies comments follow: State agencies which responded offered no adverse comments concerning this statement. See attached letters. Your attention is invited to the comments of Robert S. Braman of the University of South Florida, received through the Environmental Information Center. See attached letter.

Please append a copy of this letter, with attachments, to the final environmental impact statement submitted to the Council on Environmental Quality. This will assure the Council of our compliance with guidelines implementing the National Environmental Policy Act of 1969 (PL 91-190).

We request that the Secretary of Interior forward us one copy of the final environmental statement as accepted by it or as submitted to the Council

on Environmental Quality and, in the letter of transmittal, refer to the SPDC number assigned this statement.

Sincerely yours,

ROMER E. STILL, JR.
State Planning and Development
Clearinghouse

RESJr/was
Enclosure
cc: Mr. Robert S. Braman
Mr. Randolph Hodges
Mr. David H. Scott
Mr. Joel Kuperberg
Dr. Wilso T. Sowder
Mr. Robert L. Shevin
Mr. Kenneth Woodburn
Mr. Bill Partington

TO: Hoyt F. Still, Jr., State Planning and Development Clearinghouse
725 South Bronough Street, Tallahassee, Florida 32304

FM: Honorable Robert Shevin
Attorney General
The Capitol
Tallahassee, Florida 32301

RE: U. S. Department of Interior: DEIS on Outer Continental Shelf Oil and Gas Drainage
SPDC Project No. 72-0022

STATE PLANNING AND DEVELOPMENT
CLEARINGHOUSE
AUG 19 1971
RECEIVED
SPDC NO. 72-0022

We have reviewed the above environmental impact statement and comment as to the adequacy of treatment of physical, ecological, and sociological effects of concern to us as shown below:

	Check (✓) for each item: None	Comment enclosed
1. Additional specific effects which should be assessed:	✓	
2. Additional alternatives which should be considered:	✓	
3. Better or more appropriate measures and standards which should be used to evaluate environmental effects:	✓	
4. Additional control measures which should be applied to reduce adverse environmental effects or to avoid the irreversible or irretrievable commitment of resources:	✓	
5. Our assessment of how serious the environmental damage from this project might be, using the best alternative and control measures:	✓	
6. We identify issues which require further discussion or resolution as shown:	✓	

This agency ☑ does wish ☐ does not wish to review the final environmental impact statement on this project.

Robert L. Shevin
(Name & title of authenticating official)
Attorney General of Fla.

Enclosure(s) ☑ None ☐ Attached

TO: Homer E. Still, Jr., State Planning and Development Clearinghouse
725 South Bronough Street, Tallahassee, Florida 32304

Attn: Mr. Ben [illegible], Acting Director
Division of Planning
Department of Air & Water Pollution Control
Tallahassee Bank Building

RE: U.S. Department of Interior: DEIS on Outer Continental Shelf Oil and Gas Drainage. SFDC Project No. 72-0022

STATE AND AREAWIDE CLEARINGHOUSE
JUL 30 1971
RECEIVED
SFDC NO. 72-0022

We have reviewed the above environmental impact statement and comment as to the adequacy of treatment of physical, ecological, and sociological effects of concern to us as shown below:

	Check (✓) for each item: None	Comment enclosed
1. Additional specific effects which should be assessed:	✓	
2. Additional alternatives which should be considered:	✓	
3. Better or more appropriate measures and standards which should be used to evaluate environmental effects:	✓	
4. Additional control measures which should be applied to reduce adverse environmental effects or to avoid the irreversible or irretrievable commitment of resources:	✓	
5. Our assessment of how serious the environmental damage from this project might be, using the best alternative and control measures:	✓	
6. We identify issues which require further discussion or resolution as shown:	✓	

This agency ☐ does wish ☐ does not wish to review the final environmental impact statement on this project.

[signature]
(Name & title of authenticating official)

Enclosure(s) ☒ None ☐ Attached

July 29, 1971.

TO: Homer B. Hill, Jr., State Planning and Development Clearinghouse
725 South Bronough Street, Tallahassee, Florida 32301

ATT: Dr. Randolph Hodges, Executive Director
Department of Natural Resources
Larson Building
Tallahassee, Florida 32304

RE: U. S. Department of Interior: DEIS on Outer Continental Shelf Oil and Gas Drainage
SPDC Project No. 72-0022

STATE PLANNING AND DEVELOPMENT CLEARINGHOUSE
AUG 2 1971
RECEIVED
SPDC NO. 72-0022

We have reviewed the above environmental impact statement and comment as to the adequacy of treatment of physical, ecological, and sociological effects of concern to us as shown below:

	Check (✓) for each item	
	None	Comment enclosed
1. Additional specific effects which should be assessed:	✓	
2. Additional alternatives which should be considered:	✓	
3. Better or more appropriate measures and standards which should be used to evaluate environmental effects:	✓	
4. Additional control measures which should be applied to reduce adverse environmental effects or to avoid the irreversible or irretrievable commitment of resources:	✓	
5. Our assessment of how serious the environmental damage from this project might be, using the best alternative and control measures:	✓	
6. We identify issues which require further discussion or resolution as shown:	✓	

This agency ☒ does wish ☐ does not wish to review the final environmental impact statement on this project.

Signature: Lonnie L. Smith, Admin Asst
(Name & title of authenticating official)

Enclosure(s) ☒ None ☐ Attached

STATE OF FLORIDA
BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
ELLIOT BUILDING — TALLAHASSEE, FLORIDA 32304

Joel Kuperberg
Executive Director

TELEPHONE 224-2101

STATE PLANNING AND DEVELOPMENT
CLEARINGHOUSE
JUL 20 1971
RECEIVED
SPDC NO.

July 15, 1971

Mr. Homer E. Still, Jr.
Bureau of Planning
Department of Administration
725 South Bronough
Tallahassee, Florida 32304

Dear Mr. Still:

This office has no comments on this project. We have no jurisdiction in this area.

Sincerely,

Joel Kuperberg
Executive Director

JK/tjh

Enclosure

Claude R. Kirk, Jr.
Governor

Richard (Dick) Stone
Secretary of State

Robert L. Shevin
Attorney General

Fred O. Dickinson, Jr.
Comptroller

Thomas D. O'Malley

Floyd T. Christian

Doyle Conner

UNIVERSITY OF SOUTH FLORIDA
TAMPA
Department of Chemistry
TAMPA, FLORIDA 33620
974-2571

STATE PLANNING
AUG 18 1971
RECEIVED
SPDC/RD.

August 17, 1971

Mr. Donald Albright
State Planning and Development Clearinghouse
702 South Duval
Tallahassee, Florida 32304

Dear Mr. Albright:

Mr. Partington of the Environmental Information Center has sent me a copy of the Environmental Impact Statement, No. 72-0022-Continental Shelf Oil. I have also been asked to comment on it. I have only recently received the statement and thus have not been able to comment by the July 23rd date.

I agree almost completely with the recommendations with regard to holding certain of the parcels instead of leasing the mineral rights. I would, nevertheless, not lease any oil site in the area in question. Gas wells would be acceptible, but not near the wildlife areas.

Finally, the statement has been very well done.

Sincerely,

Robert S. Braman
Associate Professor of Chemistry

RSB:gac

cc: Environmental Information Center

STATE CLEARINGHOUSE FOR FEDERAL PROGRAMS

Federal-State Programs
Office of the Governor
510 Lamar Life Bldg.
Jackson, Mississippi 39201
Telephone 354-7570

220

State Clearinghouse No.

71081203

Date: September 17, 1971

TO: Director
Bureau of Land Management
United States Department of the Interior
Washington, D. C. 20240

PROJECT DESCRIPTION: Draft Environmental Impact Statement on proposed outer continental shelf oil and gas general lease sale offshore Eastern Louisiana.

(x) 1. The State Clearinghouse has received notification of intent to apply for Federal assistance as described above.

(--) 2. The State Clearinghouse has reviewed the application(s) for Federal assistance described above.

(--) 3. After proper notification, no State agency has expressed an interest in conferrin with the applicant(s) or commenting on the proposed project.

(--) 4. The proposed project is ( ) consistent ( ) inconsistent with an applicable State Plan for Mississippi.

(x) 5. Although there is no applicable State Plan for Mississippi, the proposed project appears to be (x) consistent ( ) inconsistent with present State goals and policies.

COMMENTS: The comments of the Gulf Regional Planning Commission and the Department of Archives and History are attached and made a part of this Clearinghouse action. The requirements of U. S. Office of Management and Budget Circular No. A-95 have been met at the State level.

David R. Bowen
Coordinator of Federal State Programs

cc: Southern Miss. P & DD
Gulf Regional Planning Commission
Attorney General's office

STATE OF MISSISSIPPI
DEPARTMENT OF ARCHIVES AND HISTORY
P. O. BOX 571
JACKSON, MISSISSIPPI 39205

ELMORE, Ph.D., Litt.D.
DIRECTOR

September 2, 1971

Mr. David R. Bowen
Coordinator Federal State Programs
Office of the Governor
510 Lamar Life Building
Jackson, Mississippi 39205

Attention: Mr. Ed May.

Dear Mr. Bowen:

I have had an opportunity to review the Draft Environmental Impact Statement for the Proposed Outer Continental Shell Oil and Gas General Lease Sale Offshore for Eastern Louisiana; and, in compliance with Mr. May's request, I have given my copy to Mr. Carl Andre of the Attorney General's office.

In reviewing this material, I note that it is pointed out on page 28 of the Statement that "oil and gas platforms can be an aesthetic distraction to recreation areas, particularly high quality national recreational areas and seashores or wilderness areas." My concern here would be that adequate safeguards be established for the visual protection of the Gulf Islands National Seashore, which was recently established by the United States Congress. Evidently, the National Park Service is satisfied that the closest tract in this proposed offering is about four miles from shore and supposedly will not provide any aesthetic distraction.

Since the Department of Archives and History has worked to secure the nomination of Fort Massachusetts to the National Register of Historic Places, I do feel that it is imperative that we take the necessary steps to assure the permanent protection of the Gulf Islands National Seashore from intrusions of this sort.

I am aware of the economic benefits that can be derived from the development of this offshore oil and gas and

I hope that a satisfactory leasing program can be developed to satisfy both economic and environmental needs.

Thank you for allowing us this opportunity to comment.

Sincerely yours,

Elbert Hilliard
Director
Division of Historic Sites and Archaeology

EH:mph

GULF REGIONAL PLANNING COMMISSION
HARRISON, HANCOCK, STONE, PEARL RIVER, JACKSON, GEORGE AND JACKSON COUNTIES OF MISS.

POST OFFICE BOX 1461
GULFPORT, MISSISSIPPI 39501

TELEPHONE (601) 864-1167

RECEIVED
AUG 26 1971

August 25, 1971

Mr. Edward A. May, Jr.
Assistant to the Coordinator
Federal State Programs
510 Lamar Life Building
Jackson, Mississippi 39201

Dear Mr. May:

Subject: Draft Invironmental Impact Statement, Proposed Outer Continental Shelf Oil and Gas Lease Sale - Bureau of Land Management, July 26, 1971
(Our ref: GARC #36-71)

We have carefully reviewed the subject Statement, and in our capacity as Metropolitan Clearinghouse for purpose of OMB Circular A-95, made certain findings which are attached hereto and made a part hereof, identified as Attachment, GARC No. 36-71.

We would like the record to reflect that this Commission is in full accord with the objectives stated by President Nixon in his Energy Message of June 4, 1971. Our comments are based upon intimate knowledge of the areas to which reference is made, and a concern for the potential hazards to navigation as well as ecosystems and possible contamination from spillage.

For purposes of clarification, the comments in the Attachement are recommendatory, and the word "must" should be construed in that context.

This concludes the comments of this Metropolitan Clearinghouse.

Sincerely,

Jack Different
Executive Director

/elb

cc: Southern Miss. Planning & Development District

Primary Area of Concern: Main Pass

Resources Effected: Wildlife refuges, estuaries, and marshlands of Breton and Mississippi Sounds, spawning and nursery grounds, Gulf Islands National Seashore.

Careful study of environmental risks to resources effected leads to the conclusion that the sale must be held in Modified Form. To quote:

"Hold the sale in modified form
The sale could be held by offering only those tracts determined to have 'acceptable' environmental risks. Those tracts believed to have 'unacceptable' environmental risks could be deleted from the sale and considered for offering at a later date should improved technology or other circumstances warrant.

This alternative could also allow for special stipulations on any proposed tract where additional requirements might be necessary to protect the environment or to eliminate possible conflicts with or potential damage to other resource values or commercial uses of the Gulf of Mexico and the adjacent land areas."

The following "blocks" of the Main Pass Area are tracts determined to have acceptable environmental risks:

219	223	261	281
220	245	262	282
221	246	263	
222	247	280	

Blocks of the Main Pass Area determined to have acceptable environmental risks only if emergency oil containment and recovery equipment is maintained on a continual standby basis.

138	141	304	311
139	302	309	
140	303	310	

Blocks of the Main Pass Area determined to have unacceptable environmental risks and known conflict with Safety Fairways and Anchorage Areas, and must be deleted from the present sale.

60	146	149
61	147	150
73	148	151

STATE OF ALABAMA

ALABAMA DEVELOPMENT OFFICE

R. C. "RED" BAMBERG, Director

August 19, 1971

RGE C. WALLACE
Governor

TO: Director
Bureau of Land Management
United States Department of
Interior
Washington, D. C. 20240

FROM: H. P. K. Walmsley, Administrator
Grant and Reference Services
State Clearinghouse

SUBJECT: Draft Environmental Impact Statement

Applicant: Bureau of Land Management; United States Department of Interior

Project: Environmental Impact Statement (Proposed Outer Continental Shelf Oil and Gas Lease Sale – Off-shore Louisiana)

State Clearinghouse Control Number: ADO-91-71

The Draft Environmental Impact Statement for the above project was received by the State Clearinghouse on August 9, 1971.

Please note that this project has been assigned the State Clearinghouse (CH) Control Number shown above. In future correspondence on this project, please refer to the CH Control Number. Your cooperation is appreciated.

This Draft Environmental Impact Statement has been distributed to appropriate State agencies and every effort is being made to ensure prompt action. You will be advised of the comments received.

A-95/04: DE

ADDRESS ONLY THE DIRECTOR
BUREAU OF SPORT FISHERIES
AND WILDLIFE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WASHINGTON, D.C. 20240

SEP 20 1971

Memorandum

To: Director, Bureau of Land Management

From: Chief, Office of Environmental Quality

Subject: Review of draft environmental impact statement concerning a Possible Oil and Gas General Sale Offshore Eastern Louisiana.

We have completed our review of the subject draft statement as you requested on August 6, 1971. Generally, the draft presents an accurate description of the coastal environment and the problems with recovering and transporting oil and gas. Measures employed to reduce the environmental impact are thoroughly discussed. We offer the following comments and suggestions, therefore, for the purpose of correcting minor errors in the draft or for clarification. All suggested changes have been made in the copy of the draft report, which we are returning.

Page 8, footnote. The correct citation is 1/ Chapman, Charles R. The Texas Water Plan and Its Effect on Estuaries. In: A Symposium on the Biological Significance of Estuaries. Sport Fishing Institute, Washington, D.C., March 1971.

Page 9, line 15. Replace with, "Destruction is caused by dredging canals in which to place pipelines, to float drilling barges, and to provide boat access."

Page 12 (Recreation Resources). All of the coastal areas of Louisiana are suitable for outdoor recreation, not just 1.3 million acres. The same is true for Mississippi. Change to, "In Mississippi and Louisiana, all of the region bordering the Gulf is suitable for outdoor recreation. In the coastal area of Mississippi, all but 12,000 acres are in public ownership."

Page 12, last line. Sounds are estuaries, so delete "and sounds."

Page 14, line 7. Delete "central and" and "s" in flyways.

Page 15, line 7. Delete "and West Timbalier Island refuges and." Insert "National Wildlife" after Breton Island.

Page 16, line 8. Change colony to colonial.

Page 16, line 10. Delete "central and" and "s" in flyways.

Page 17, line 13. Change to, "Colonial birds such as gulls and terns...."

Page 18, last line. Insert "Mississippi" before commercial.

Page 20, line 1. Insert after Mexico, "and the larger seatrout also are caught at the platforms."

Page 20, line 12. Croaker is misspelled.

Page 22, line 15. Ribbon is misspelled.

Page 28, line 8. Delete "of heavy" and substitute "which receive."

Page 28, line 8. Delete "frequently."

Page 30, line 1. Delete "they" and insert "dense concentrations of these birds."

Page 30, line 2. Insert after it, "Contamination by oil destroys the waterproof qualities of their plumage from which condition they seldom recover, even when careful rehabilitation is attempted. Hundreds of thousands of swimming and diving birds have perished in this way, and marked reduction of some nesting populations of sea birds from such mortality has been documented." 1/

Page 30, add footnote. 1/ J.W. Aldrich. Review of the Problem of Birds Contaminated by Oil and Their Rehabilitation. U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Resource Publication 87, 1970. Change numbering sequence on other footnotes.

Page 33. Be consistent by using either barrels or gallons, but not both.

Page 36, lines 16-21. Replace with, "...Louisiana, much of it by dredging canals for pipelines. Such destruction of coastal marshes undoubtedly reduces the basic productivity of the estuaries."

Page 37, line 11. Insert "waterfowl hunting" after shellfish.

Page 39, line 12. After damage add, "although admittedly they were not thoroughly studied."

Page 51, line 7. Add after occur, "The immediate destructive effects of contact of water birds with floating oil is obvious."

Page 51, line 8. Add "however" after environment.

R F Johnson

Enclosure

United States Department of the Interior

BUREAU OF OUTDOOR RECREATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

SEP 30 1971

Memorandum

To: Director, Bureau of Land Management

From: Director, Bureau of Outdoor Recreation

Subject: Review and comment on draft environmental Impact Statement Concerning a Proposed Oil and Gas General Sale Offshore Eastern Louisiana

The subject environmental statement has been reviewed. We are especially interested in the Gulf of Mexico and the shore of the bordering States because of the potential the area possesses for meeting current and future outdoor recreation needs.

We are aware of the national energy shortage and the Nation's urgent need for adequate energy supplies. Likewise, we are well aware that mineral and fuel production may significantly affect outdoor recreation and the associated environment.

The draft environmental statement from our viewpoint of outdoor recreation recognizes the environmental impact that crude oil and natural gas production on the Outer Continental Shelf along the Eastern Louisiana Coast may have. The leases will be on a case-by-case basis with special restrictions and limitations being imposed when necessary to protect the environment peculiar to the area. This includes special consideration for those leases that are in proximity to shore areas of high esthetic or economic values relating to recreation or tourism.

The opportunity to comment on the draft statement is appreciated.

Roman H. Koenig

RECEIVED
BUREAU OF LAND MANAGEMENT
COMMUNICATIONS UNIT
OCT 1 1971

OFFICE OF THE DIRECTOR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20240

September 9, 1971

Memorandum

To: Director, Bureau of Land Management

From: Director, Bureau of Mines

Subject: Draft Environmental Impact Statement Concerning a Possible Oil and Gas General Sale Offshore Eastern Louisiana

The subject draft report appears to be the most comprehensive environmental statement prepared to date for an Outer Continental Shelf lease sale. It is our view that the statement complies with the requirements of the National Environmental Policy Act of 1969.

In part, the Bureau of Mines participated in the preparation of the draft report by stressing the growing energy demands and the importance of expanding domestic oil and gas production capacities through additional offshore leasing. For this reason, it is essential that the report communicate this need effectively and be sufficiently persuasive to gain general support for a sale.

Enclosed is a copy of the draft report with our comments therein. The Bureau will continue to assist in the completion of the subject environmental statement in accordance with your memorandum of June 9.

Acting Director

Enclosure

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

SEP 22 1971

Memorandum

To: Director, Bureau of Land Management
Through: Assistant Secretary--Mineral Resources

From: Acting Director, Geological Survey

Subject: BLM draft environmental impact statement relating to a proposed OCS oil and gas lease sale offshore eastern Louisiana

We have reviewed the subject statement and our comments on specific sections are enclosed.

In general, the subject report appears to have covered the pertinent environmental factors involved with OCS operations. However, we believe that the statement should also include a reference to the fact that there are over 1,000 oil and gas wells located within Louisiana waters (within 3 miles of shore).

Also, the block analysis seems to consider that each block is the only potential source of pollution for the sensitive "high resource areas". This is generally untrue. In fact, most of the proposed tracts are located in areas with numerous other oil and gas operations (both State and Federal) that are closer to the sensitive resource areas. Accordingly, should production be developed on the tracts in question, this additional production would present less threat to the sensitive areas than existing production. Thus, in most instances, rather than posing the only hazard to the resource values in question, the proposed tracts would only increase the present possibility for damage by pollution by a relatively small percentage.

Acting Director

Enclosure

FRIENDS OF THE EARTH

c/o C Street, S.E., Washington, D.C. 20003

[illegible] Brower, President

January 20, 1971

The Director
Bureau of Land Management
Attention Div.
U.S. Department of Interior

Dear Sir:

Uncertainty of the limits of the proposed Gas Pipeline scheduled for December of this year in the Gulf of Alaska, Friends of the Earth recommends cancellation of the entire sale.

Attached are some opinions on the draft environmental impact statement, and some recommendations concerning the final statement.

We hope that all other comments will be given due consideration before any decision is reached.

Sincerely,

James Rathlesberger

...20 C St., S.E., Washington, D. C. 20003

...m, President

...

1) On page 9, in the section titled "Reason for the Proposed Sale of F-5's," the report states: "The growth in electric power and industrial demand for power has caused a substantial level of energy growth from 1960 to 1970 [and] increased at an annual rate of 4.3 percent. ... limitation of sources for the environmental reasons requires that a greater share of future energy needs be met by low sulfur fuel." (p. page 34, however, the statement says, "although the use of this oil for residual oil purposes cannot be curtailed, it will be available as a source of clean energy." Since the need for low sulfur fuels is given as one reason for the sale (the other being increased power demands in general) the Department of Interior should make a further effort to determine just how much of the oil would in fact be used for low sulfur fuel. One prerequisite for the sale should, indeed, be a guarantee that the resources will be used for such purposes.

We understand that most domestic refineries are not ...ered for the production of low sulfur fuel, and that most low sulfur fuel is thus imported. This matter should be discussed in the final environmental impact statement.

2) The National Environmental Policy Act of 1969 requires that environmental impact statements give consideration of alternative actions. The statement for this sale only devotes three pages (pages 48-50) to this subject. A more extensive review of alternatives would be desirable and more in line with the spirit of the law.

One alternative listed is that the "sale could be held by offering only those tracts determined to have acceptable environmental risks." The final statement should discuss what the Department of Interior considers an "acceptable environmental risk." We suggest that use of the terms "acceptable" and "unacceptable" be dropped altogether, in favor of the similar but more objective classification of "environmental risk."

The impact statement says not holding the sale would mean that "new domestic sources of clean energy would need to be developed." Again, however, it must be asked whether the sale would contribute to clean energy. If it will not, then new

Environmental Action
Room 731 1346 Connecticut Ave. NW Washington D.C. 20036
(202) 833-1484

September 18, 1970

The Director
Bureau of Land Management
Attention 310
U.S. Department of Interior

Dear Sir:

We would like to express our strong opposition to the proposed lease of eighty-six tracts of oil and gas on the Louisiana Outer Continental Shelf. The sale would seriously violate all of our mandates in this country at resource management, conservation of energy, and environmental protection. Granted, it is a small project in a region where drilling operations are already extensive and more are planned. But it is just one more step in the wrong direction which can only lead to the serious national energy shortage it purports to combat.

In the draft environmental impact statement, this sale is justified on the grounds that it will help satisfy the national goal to develop clean energy sources, specifically low-sulfur fuels. The alternative of not holding the sale is dismissed on the grounds that other domestic sources for clean energy would have to be found. But it is admitted that the use of the oil from this lease "for residual oil purposes cannot be guaranteed." In other words, the oil companies will more than likely refine crude into economically profitable light fuels. Unless the Bureau of Land Management restricts the use of the new resources to the production of clean energy, this lease can only add to the existing pollution and steal badly needed funds from research on alternative non-polluting power sources.

Another justification for the sale is that its delay would "contribute to a national energy shortage." No mention is made of reducing this shortage by reducing consumption. In fact, the production of more energy encourages more consumption and essentially speeds up our arrival at a serious national shortage. The impact statement admits that the sale would "lower the long-term productivity of oil and gas resources of the Gulf of Mexico."

By permitting the immediate development of these limited resources, the sale encourages their development under today's standards. Unfortunately, it is still economically profitable today to produce fuels which not only increase pollution but are made so convenient to the public that they encourage over-consumption. If the sale were cancelled,

perhaps the reservoir could be observed for a time when clean energy is at a peak and consumption levels have decreased to a point where energy is no longer grossly wasted.

The draft environmental impact statement also lists serious environmental damages that will result from this sale with no adequate means to avert or to protect against such damages. Perhaps the most obvious risk is the threat to the marine ecology from oil spillage which by the Bureau's own admission is substantial. According to the impact statement, any major spills will be prevented from occurring "except through storm damage, equipment failure, operator error, and vessel collision." It is to be assumed that the spills will not occur under normal operating procedures, but mistakes, accidents, hurricanes, and failures cannot be prevented and they are expected to result in at least one major spill per year (11 every ten years). If presently reported spills around the world can be taken as any indication, such an estimate is extremely conservative. And as the number of platforms and structures increases, and the interference with shipping lanes increases, the likelihood of accidental spills also increases.

Furthermore, the term "major" is misrepresentative; certainly a series of minor spills and the daily build-up of oil in waste water from drilling operations can result in just as much oil pollution and just as much damage as one major spill.

Once a spill occurs, protective measures are again limited. The impact statement refers to "effective" contingency actions, but a closer look reveals that such actions will often be ineffective. The alternative of only leasing tracts with "acceptable environmental risks" does not exist-- the expected risks for the entire area are such that the sale must be cancelled if serious environmental damage is to be avoided.

It is admitted that oil pollution:

1)cannot be quickly contained in 25 of the tracts up for lease (30 percent!)
2)will damage waterfowl which are "extremely vulnerable to oil spills" because of "likely...direct contact"
3)could reduce or eliminate a generation of major organisms wherever it occurs.

Furthermore, the chemicals used to clean up surface oil are often "more toxic than crude oil." Those plant and animal species not immediately killed or seriously damaged by the oil face destruction from the removal of the oil.

Pipeline construction will also cause "further marsh destruction" which "will undoubtedly effect the basic productivity of the estuaries." Since a majority of marine fish and plant species are dependent on estuarine wetlands for some part of their life cycle, damage to estuaries will cause irreversible damage to dependent marine organisms.

The Gulf of Mexico fishing industry is the most productive in the nation, its coastal marshes and estuaries contain one of the largest concentrations of

[illegible]

3) The Natural Resources Defense Council has criticized the Department of Interior for [illegible] the Gulf of Mexico without adequate knowledge of the environmental consequences. The draft statement on this sale, however, only devotes one-half page to each subject. This section should be improved.

The draft says on page 51 that the sale would "lower the long-term productivity of oil and gas resources of the Gulf of Mexico...." The draft statement should discuss how much lowered the long-term productivity would be. Also, the magnitude of total recoverable resources of fossil fuels should be discussed. Page [illegible] indicate that our total domestic supplies of oil and natural gas might be exhausted in about one hundred years. This demands more than one-half page.

4) The probability of oil pollution in the Gulf of Mexico increases as the number of off-shore wells increases. According to the U.S. Geological Survey the number of wells is increasing every year:

	1968	1969	1970
New Wells Begun on Louisiana OCS	693	784	768
Total Oil and Gas Wells on Louisiana OCS	4,147	4,567	5,000

The proposed sale would also add to the number of wells, and the Department of Interior plans 9 more sales in the Gulf of Mexico during the next four years. These facts should be taken into consideration by the final impact statement.

5) The draft impact statement points out on page 31 that the "full effects of spilled oil on the environment and its living resources at the various trophic levels are poorly understood. Detailed studies are urgently needed...." The final statement should describe what research into the matter is being done, with particular emphasis on that being conducted by government and oil industries.

6) Noting that some of the tracts are located in safety fairways for shipping, the draft statement says on page 45 that "the fairways could possibly be shifted." The final statement should discuss what the probability of their being shifted is. Assuming they might be shifted, the final statement should also discuss how many safe shipping fairways will be left as off-shore drilling in the Gulf of Mexico proliferates.

[illegible] ... [illegible] ... [illegible] ... [

returned in the water. Therefore, damage can also be expected to be [illegible] in [illegible] ecological systems.

[illegible] only the known and expected damage. One of the most crucial admissions in the [illegible] is the fact that "full effects of spilled oil on the environment and its living resources at the various trophic levels are poorly understood. Detailed studies are urgently needed..." Certainly the area should be postponed until these studies are completed and better safeguards are developed.

Written admissions of these problems does nothing to solve them. If the result of the National Environmental Policy Act of 1969 is only to "write-off" the environmental damage likely to occur, we might as well throw it in the wastebasket. Presumably, the purpose of NEPA is to require research into the adverse environmental consequences of any project so that they may be combatted or avoided. But the unavoidable damages that will result from the sale as it now stands are clear: serious environmental damage with some long-term adverse effects that cannot even be predicted; immediate consumption of limited energy supplies which might otherwise be saved for a period of real shortage; probable use of resources for economically profitable light fuels rather than environmentally needed clean fuels. All the evidence suggests that this sale should be cancelled.

Unfortunately, Environmental Action is just one private group based in Washington D.C. with approximately 8,000 supporters. Though our concern is grave, our effort by ourselves can only be minimal, and one local project after another will continue to slip by with approval until violent frustration creates enough national pressure to change the trend of wasting resources and destroying the environment for profit. Until then, we can only register our opinion and hope that it receives some consideration.

Sincerely,

Avery Taylor

Avery Taylor
for the staff

the NEB decision and said it would not adversely affect gas producers.

"There will be no locked-in reserves in western Canada," he said. "All reserves dedicated to the proposed exports can be immediately placed under contract for the Canadian market and brought on stream as quickly as producing and transmission facilities can be constructed."

TCPL holds a monopoly on moving western gas to markets in eastern Canada.

Although the Canadian domestic market will absorb all the natural gas that is available at the current delivery rates, he believes "exploration now taking place in northern Canada and off the Atlantic Coast will result in the development of large new reserves. These developments will provide the basis for future exports and, in fact, export markets will be required if the potential of these areas is to be realized." This is pretty well in line with what Panarctic Oils Ltd. suggested at the NEB hearing.

Kerr also promised higher prices for the gas to producers, since "to do otherwise would be self-defeating. We must take all necessary steps to ensure that adequate incentives are maintained to provide for high activity in exploration and in drilling for additional gas reserves."

No regional base. The board also ruled against determining current and future needs on regional rather than on an all-Canada basis, as requested by Westcoast Transmission at the hearing. Westcoast wanted British Columbia, Yukon, and Northwest Territories reserves within reach of its system exempt from the overall reserves available for export in the application since it would be "beyond the economic reach of the applicants."

The NEB admitted in the decision higher export prices stimulated interest "among producing companies in obtaining export markets for their gas. The danger here is obvious to all: An overcommitment to export markets. . . could deprive the rapidly expanding Canadian markets of access to gas.

"Canadian consumers are entitled to protection for their needs, but these needs must be actual or reasonably foreseeable and not mere hopes of increased markets. To accept at full value any excessive estimates of Canadian requirements, would result in unnecessarily locked-in reserves of gas, losses to producers, and deterrents to exploration and development."

Interior deletes eight tracts from Offshore Louisiana sale

THE Department of Interior has scratched eight environmentally sensitive tracts from its eastern Offshore Louisiana oil and gas lease sale for Dec. 21.

That still leaves 78 tracts totaling 366,000 acres on which cash bonus bids will be received. Sixteen of these will have special stipulations drawn to safeguard exposed fisheries, wildlife, and recreational areas from oil spills.

A considerably larger sale (593,000 acres) off western Louisiana put $845 million in the U.S. Treasury last Dec. 15. Bid opening will begin at 10 a.m. Dec. 21 in the grand ballroom of the Sheraton-Charles Hotel in New Orleans.

Deleted tracts. Interior Sec. Rogers C. B. Morton said the tracts were withheld from this sale "because of their proximity to the Delta Migratory Waterfowl Refuge, the Breton Wildlife Refuge, and associated marshlands, estuaries, and spawning and nursery grounds."

Knocked out were South Pass Blocks 32, 33, 34-35, and 73, and Main Pass Blocks 73, 147, 148, and 151, totaling 30,000 acres.

"These tracts," Morton explained, "are in an area where state and federal production already exists. Nevertheless, we are deferring these tracts for leasing until some future date, when we feel we have sufficient knowledge of potential effects on marshlands and estuaries supporting substantial bird and sea-life communities."

The tracts were given the maximum environmental risk rating in the final impact statement filed Oct. 21 by the Bureau of Land Management.

Except for the eight deleted, the tract list published in the Nov. 20 Federal Register is the same as that issued originally (OGJ, July 26, p. 67).

Acreage is in Ship Shoal, South Timbalier, Grand Isle, West Delta, South Pass and Main Pass areas.

Stipulations. Three Ship Shoal blocks —98, 110, and 160—will be subject to severe platform restrictions under terms of the sale notice.

No structure for drilling or production may be erected until the regional supervisor of the U.S. Geological Survey finds it is necessary for exploration and development. The lessee must file plans with the supervisor showing how planned placement and grouping of structures will have the "minimum practicable effect on commercial fishing operations."

The supervisor may veto any structure which he determines "will unreasonably interfere with other uses of the area."

Lessees of 13 other tracts will be subject to special requirements for oil-spill readiness. These are West Delta Blocks 35-36, South Pass Blocks 46, 47, 48, 49, 51, 52, 53, 56-57, and South Pass-South and East Addition Blocks 75, 76, 77, and 78.

Lessees must maintain or have available under contract "adequate oil-containment and cleanup equipment approved by the regional supervisor at a readily accessible site" during drilling and production. Within 12 hours after a spill deemed "significant" by the supervisor, lessees are required to have containment and cleanup equipment in use at the site. The proposed method of monitoring drilling and production is also subject to approval by the supervisor.

Aquitaine chooses Hudson Bay spread

AQUITAINE Co. of Canada Ltd. and its partners in the Hudson Bay search have selected 15 million of their 52-million-acre offshore permit spread and will return the remaining 37 million acres to the Canadian government.

The group, which includes Aquitaine (25.3%), Atlantic Richfield Canada Ltd. (52.6%), Elf Oil Exploration & Production Ltd. (7.9%), Canadian Fina Oil Ltd. (6.6%), and Sogepet Ltd. (6.6%), continues its plan to drill in Hudson Bay in 1973.

Considerable geophysical and geological work has been conducted over the block during the past several years, including the drilling of a suspended well to half of its target depth in 1969.

The work placed the group in a position where it could selectively drop acreage "to reduce the very heavy work obligation which otherwise would be required under federal regulations."

Interior surrenders, cancels gulf sale

Agency's crash amending of impact statement goes for naught, as judge declines to make swift decision. He cites press of other cases, importance of issues. Morton says all bids for leases are being returned.

THE Department of Interior gave up Jan. 20 on its efforts to go ahead with the Offshore Louisiana lease sale stalled by a district court injunction.

Interior Sec. Rogers C. B. Morton announced the sale, originally scheduled for last month, is "canceled, and all bids are being returned unopened."

Morton acted after a federal judge a day earlier rejected an Interior request for a prompt ruling to permit completion of the sale.

His move means the department must issue a new sale notice—and perhaps go through the environmental review process once more—before the tracts can be reoffered. The development knocks out chances for the next Offshore Louisiana sale, tentatively planned for May, and could delay the Offshore Texas sale planned for December as well.

The department had moved quickly to correct a defective environmental-impact statement in hopes the injunction could be lifted and the bids opened before midnight Jan. 20. Without a decision by 4 p.m. Jan. 19, the Justice Department lawyer pleaded, the 298 sealed bids received on the Dec. 21 sale date would have to be returned immediately unopened.

High bids on the 78 tracts offered, the Government estimated, should bring $500 million into the treasury. The bids, ordered impounded by an appeals court Dec. 20, must be acted on within 30 days under terms of the sale notice, the lawyer stated. Thus, he said, if the deadline went by, there would have to be a new sale notice and a new round of bidding.

But U.S. District Judge Charles R. Richey turned down the plea for a quick decision as unfair to him and other interested parties. He said the issues were too important to be dealt with in haste, and, with the press of other cases, he could not possibly write a decision in the time proposed. He also questioned whether the amended statement met the full requirements of the law.

Haste charged. The Government filed on Jan. 17 a 29-page addendum to the original environmental statement with Judge Richey. It was drawn up in 48 hr following instructions from a three-judge panel of the U.S. Court of Appeals for the District of Columbia. The appeals court, in a 2-1 decision Jan. 13, agreed with Judge Richey's Dec. 16 decision that the original statement didn't go far enough in discussing alternatives to the sale. But the scope did not have to be as broad as Judge Richey indicated, the appeals court added.

Environmentalists charged in last week's hearing that the addendum still did not comply with the National Environmental Policy Act of 1969. They objected to the hurried preparation without, they said, consultation with other federal agencies responsible as to the new alternatives set forth.

Judge Richey pointed out that while he had read the new material, other memoranda were not filed with his court until the moment he walked into the courtroom for the Jan. 19 hearing. Also, the appeals-court order of 6 days before was just delivered to him the morning of the 9 a.m. hearing.

Furthermore, the judge added, there was some question as to whether Interior should not have sent the addendum to states and other interested parties for comment before proceeding. He asked if the Council on Environmental Quality's waiver of the 30-day wait before acting on a new statement satisfied the legal obligation.

His line of questioning raised the possibility that, even when he does hand down a ruling, it might again go against the Government and leave the injunction intact.

The Government argued that the law did not require circulation of the addendum, as part of the final impact statement—only the draft statement issued months ago. The final statement must be filed with the President and his Council on Environmental Quality, and made available to the public—but not circulated for comment, in the Government's view.

The judge took the matter under advisement. Meanwhile he asked the parties to get together and work out a compromise, if possible.

Addendum contents. The new material filed with the court appraised the "alternatives" of increased imports, an end to state market-demand proration, increasing offshore leasing and production, raising natural-gas prices at the wellhead, and increasing nuclear-energy development.

The three environmental groups who obtained the preliminary injunction argued successfully at the Dec. 16 hearing that these other possible sources of energy were inadequately considered or not mentioned at all.

The issue was adequacy of the statement, not the wisdom or legality of the choice to conduct the offshore sale.

Discussions required. The appeals-court decision overrode Interior's claim that it did not have to discuss alternatives beyond the discretion of that department.

The impact statement, the court held, should also consider the environmental effects of alternatives beyond the control of the particular agency involved. However, Judge Harold Leventhal wrote, NEPA does not require detailed discussion of alternatives "deemed only remote and speculative possibilities, in view of basic changes required in status and policies of other agencies."

The appeals court thus ruled there was no need to discuss development of oil shale, increasing use of low-sulfur coal or desulfurization of coal, development of coal liquefaction and gasification, geothermal resources, and tar sands.

Alternatives set forth. Interior submitted 29 supplemental pages of analysis to comply with the decision.

The addendum dealt with sources of energy "which might be reasonably available as near-term alternatives to further leasing of Outer Continental Shelf oil and gas resources" in this way:

- Oil-import controls—increased imports would lower domestic prices of oil, reduce domestic production of oil and gas and future exploration, while offshore production would probably continue since it is relatively

attractive economically. Increased imports by tanker from overseas would increase hazards from spills; offshore production worldwide accounts for only 2% of ocean pollution from oil compared to 28% from tankers and 19% from other marine vessels. Most of the [illegible]ign oil would have to come from [illegible]cure sources in the Eastern Hemisphere.

• Prorationing—has already been ended on federal OCS leases and may vanish by 1974 or 1975 along with surplus capacity in Texas and Louisiana. To eliminate state prorationing would probably require: (a) voluntary state revision of their laws, and/or (b) repeal of the Connally Hot-Oil act, possibly coupled with subsequent attack on prorationing under antitrust laws, (c) negotiation with the states to permit production at MER, with the federal Government reducing imports by a like amount, or (d) allowing increased imports, thus forcing prices down and requiring optimum production from the most efficient fields. Attempting to produce at MER without additional facilities could result in flaring of excess natural gas unless strictly controlled and monitored, and in environmentally detrimental disposal of oily brines.

• Increasing onshore leasing and production—Subsidies or other economic incentives could add to onshore domestic production capacity, but little is known of the cost or effectiveness of such a program. A good deal of any onshore production to be added would be from sources not now considered available for lease—such as naval petroleum reserves. To achieve the same oil and gas production capacity as the proposed sale (75,000-150,000 b/d of oil, 250,000 MMcfd of gas) would require about 13,000 additional wells onshore. Opening up of the North Slope and production from the proposed OCS sale area still wouldn't remove the supply-demand deficit.

• Natural-gas pricing—FPC is already moving to raise wellhead prices, although ceilings are well below what they would be in a free market, as reflected in intrastate prices 25 to 50% higher. Further increases would boost onshore gas discoveries. But many of the remaining areas thought to have significant gas potential are offshore. Finally, gas cannot be substituted for oil in latter's big markets.

• Nuclear-energy development—If the prospective OCS production were to be replaced entirely by energy from power plants, five to ten additional nuclear plants of 1,000-mw capacity each would have to be in operation by 1978. These plants would use naturally occuring isotopes of Uranium-235, which is in limited supply, and pose their own environmental hazards.

Pattern set. The amended statement, and the appeals-court decision, will be a model for future documents unless another appeals court or the Supreme Court holds otherwise.

Judge Leventhal stressed that the court's job is to see that federal officials and agencies take the hard look at environmental consequences mandated by Congress. The law requires that this be done in statements justifying every major action that may have a significant effect on the environment.

When this hard look has been taken, there is compliance with the law. "The court does not seek to impose unreasonable extremes or to interject itself within the area of discretion of the executive as to the choice of the action to be taken," he said.

World's deepest hole bottoms at 28,500 ft

THE world's deepest hole, Ralph Lowe Estate 1-17 University in Pecos County, West Texas, has bottomed out at 28,500 ft in Ellenburger dolomite at a cost to date of $3.75 million.

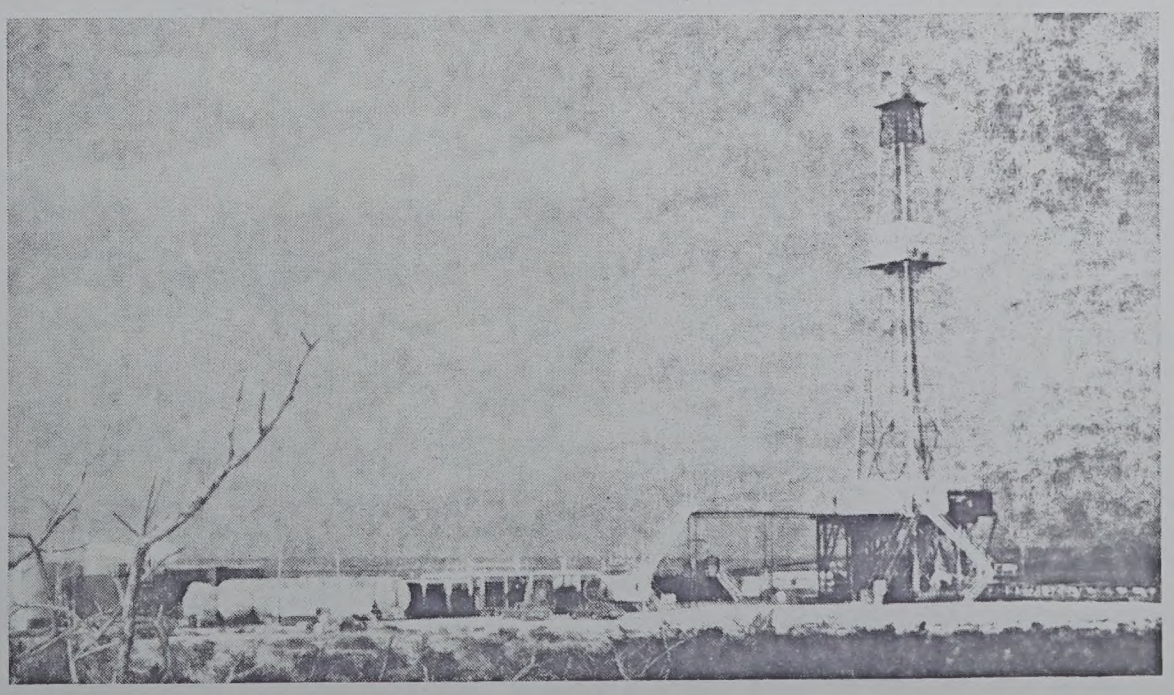
The Delaware basin wildcat reached total depth Jan. 15—1½ years after Parker Drilling Co.'s Rig 86 respudded the hole July 16, 1970, at 8,405 ft. The cost estimate includes the original hole, drilled by Lowe in January 1970.

Total depth is 2,900 ft below the previous world mark of 25,600 ft set in 1970 by a Placid Oil Co. dry hole in St. Bernard Parish, South Louisiana. Lowe's test broke the record Nov. 5, 1971 (OGJ, Nov. 15, 1971, p. 110).

Penetration rate averaged 36.6 ft/day for the 549-day deepening operation, with no major problems.

Parker Pres. R. L. Parker, Tulsa, says the hole could have been carried to 35,000 ft with present equipment on Rig 86. The rig has a 2,750-hp draw[illegible]orks and two mud pumps rated at [illegible]00 hp and 1,000 hp, respectively.

More cost is on the way at the new record holder. Lowe Estate, based at Midland, Tex., plans to finish a suite of logs, then run more than 4,980 ft of 5-in. liner and test the Ellenburger through perforations. Hydrostatic pressure of the mud column prevents a drill-stem test.



LOWE Estate's new depth-record holder in Pecos County, West Texas.

Lowe's partners include Skelly Oil Co., El Paso Natural Gas Co., Getty Oil Co., Jake L. Hamon, and Hassie Hunt Trust.

Another superdeep test, Lone Star Producing Co. 1 Earnest R. Baden Unit in Beckham County, Okla., was drilling below 27,443 ft last week. Loffland Bros. holds the 28,000-ft contract to test the Hunton.

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